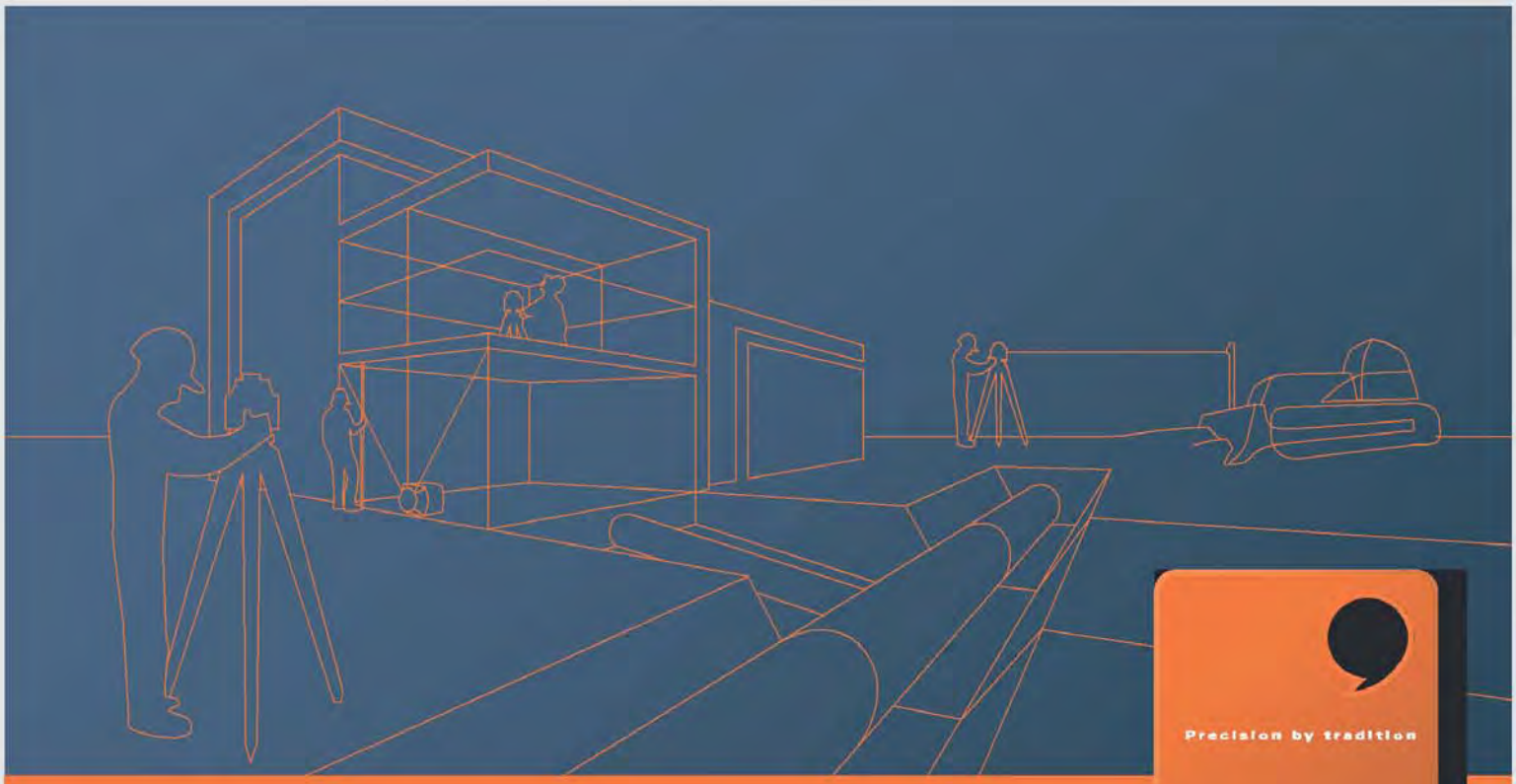
FENNEL



Herramientas de medición láser
Equipos de precisión
Instrumentos de medición ambiental

2010/2011

Benchmark for measuring.

Laser measuring tools and surveying equipment from geo-FENNEL.

Quality that is measurable.

Enhanced by our commitment to service and support.

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Application

FL 1000

duo-Pointer

Self levelling laser plummet - replaces the traditional way of plumbing from floor to ceiling.

Plomada láser autonivelante.
Transfiere puntos de suelo a techo.

tradEs aNd tasKs

· Transfer of points from floor to ceiling in numerous applications: electrical, plumbing, heating, shop fitting, decorating, renovation, interior design, dry mortarless construction, carpentry, timber frame construction

FEaturEs

· Laser plummet up/down
· Self-levelling
· Robust housing
· Visual and audible alarm when out of level
· Transport lock
· Built-in magnets
· 1/4“-thread for camera tripod
· Dust/water protection

tEcHNicaL data

Self-levelling range	± 5°
Accuracy	± 2 mm/10 m
Working range	30 m
Laser diode/Laser class	635 nm/2
Power supply	3 x AA Alkaline
Operating time	15 h
Temperature range	-10 °C – +45 °C
Dust/water protection	IP 54
Weight (instrument only)	0,6 kg

suppLiEd WitH

Magnetic target, padded bag, set of batteries

art.-No. 575000

Multi-Pointer

5 self-levelling laser beams at right-angles to each other: up, down, left, right and forward. Plumb, level, square and align simultaneously – it couldn’t be easier.

5 puntos láser autonivelantes
formando ángulo recto entre ellos

tradEs aNd tasKs

· Electrical: planning, layout for fixtures and fittings
· Shop fitting: shelves, floors
· Dry mortarless construction: aligning tracks and profiles

FEaturEs

· Easy operation
· Out-of-level alarm
· Multi-functional mount to attach the instrument to
  - floor and wall
  - wall frames
  - pipes
  - tripod (5/8“ and 1/4“)
· Transport lock
· Robust housing
· Dust and water resistant

tEcHNicaL data

Accuracy	± 2 mm/ 10 m
Working range	30 m
Self-levelling range	± 3° – 5°
Laser diode/Laser class	650 nm / 2
Tripod mount	5/8“ + 1/4“
Size	80 x 98 x 101,6 mm
Weight (instrument only)	0,74 kg
Power supply	3 x AA Alkaline
Temperature range	-10 °C – +40 °C

suppLiEd WitH

Multi-functional mount, magnetic target, strap attachment, batteries, hard case

art.-No. 555000

torpedo

The universal laser spirit level that incorporates a beam splitter to generate a laser dot or a laser line.

Nivel con punto láser y línea

tradEs aNd tasKs

- Interior works: transferring levels, alignments
- Tiles: floor, wall
- Plumbing, heating: cables, pipes, radiators

FEaturEs

- Switchable laser point or laser line
- Stepless rotation of laser line plus 90° lock intervals
- 45°, 90° & 180° vials
- Magnetic base
- 1/4" thread for tripod

tEcHNicaL data

Accuracy	± 3 mm / 10 m
Working range	max. 30 m*
Visible laser diodes	1 x 635 nm
Laser class	2
Power supply	2 x 1,5 V AAA Alkaline
Operating time	30 h
Temperature range	0 °C – +40 °C

* depending on room illumination

suppLiEd WitH

Batteries, case

art.-No. 560000

Square Liner II

The angle template generates two laser lines at 90° to each other. Ideal for use on floor and all tiling!

Escuadra láser

tradEs aNd tasKs

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets
- Tiling: floor, wall
- Decorating: wall covering, borders
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Carpenter: shelves, cut edges
- Interior works

FEaturEs

- Projects 2 laser lines at 90° to each other (right angle)
- Fine and clear visible laser lines
- 0° to 90° graduation for setting out 90°, 45° or any required angles to floor, wall or ceiling
- Built-in circular and tubular vials for horizontal and vertical alignment

tEcHNicaL data

Accuracy	± 3 mm / 10 m
Working range	max. 30 m*
Visible laser diodes	2 x 635 nm
Laser class	2M
Power supply	2 x 1,5 V AA Alkaline
Operating time	48 h
Temperature range	0 °C – +40 °C

* depending on room illumination

suppLiEd WitH

Batteries, magnetic target, case

art.-No. 551000

- Electrical: conduit, trunking, switches, sockets
- Tiles: wall
- Plumbing, heating: cables, pipes, radiators
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement

FL 40-Pocket II

Robust and handy laser cross level.
Horizontal and vertical levelling and aligning.

FEaturEs

- Laser cross
- Detachable multi-functional mount
- Base and side magnets
- Visual and audible alarm when out of level
- Thread on instrument and mount (5/8" and 1/4")
- Locking device for safe transport
- Pulse function for use with receiver FR 55/FR 55-M (optional) to extend the working range up to 30 m

suppLiEd WitH

Multi-functional mount, set of batteries, magnetic target, padded carrying bag

art.-No. 541000

OptiONaL

Receiver FR 55 / FR 55-M

art.-No. Fr 55 500510
art.-No. Fr 55-M 500520

FL 40-Pocket II HP

High-power-Version.

High specification diodes for optimum visibility of laser lines.

suppLiEd WitH

Multi-functional mount, set of batteries, magnetic target, padded carrying bag

art.-No. 541100

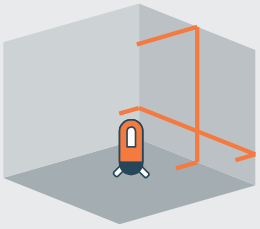
OptiONaL

Receiver FR 55 / FR 55-M

art.-No. Fr 55 500510
art.-No. Fr 55-M 500520

tEcHNicaL data	FL 40-pocket II	FL 40-pocket II Hp
Self-levelling range (left/right)	± 4°	± 4°
Accuracy	± 3 mm/10 m	± 3 mm/10 m
Working range without receiver	10 m*	20 m*
Working range with receiver	30 m	30 m
Operating time	48 h	48 h
Power supply	3 x 1,5 V AA Alkaline	3 x 1,5 V AA Alkaline
Laser diodes/Laser class	635 nm/2M	635 nm/3R
Weight	0,8 kg	0,8 kg

* depending on room illumination



FL 40-3Liner

the Best-seller.

The ideal measuring tool for interior works! Versatile and efficient. The laser line at 90° is ideally suitable for floor covering tasks (carpet, wood, hard tiles) as well as for wall tiles. Can be used on the floor as the laser lines start directly from the instrument.

suppLiEd WitH

Wall/tripod mount, set of batteries, magnetic target, laser intensive glasses, padded carrying case

art.-No. 530000

OptiONaL

Receiver FR 55 / FR 55-M

art.-No. Fr 55 500510
art.-No. Fr 55-M 500520

Receptor opcional

tradEs aNd tasKs

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets
- Tiles: floor, wall
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Exhibitions design and construction: panels, partitions, construction
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, suspended ceilings

FEaturEs

- Laser cross
- Vertical laser line at 90° to laser cross
- 3 visible laser lines
- Magnetic damping
- Locking device for safe transport
- Visual and audible alarm when out of level
- Pulse function for use with receiver FR 55/FR 55-M (optional) to extend the working range up to 30 m

FL 40-3Liner HP

Versión alta potencia!

High specification diodes for optimum visibility of laser lines.

Proyector de cruz láser + línea vertical a 90°

tEcHNicaL data	FL 40-3LiNEr	FL 40-3LiNEr Hp
Self-levelling range	± 3,5°	± 3,5°
Accuracy	± 3 mm/10 m	± 3 mm/10 m
Working range without receiver	10 m*	20 m*
Working range with receiver	30 m	30 m
Operating time	15 h	15 h
Power supply	3 x 1,5 V AA Alkaline	3 x 1,5 V AA Alkaline
Laser diodes/Laser class	635 nm/2M	635 nm/3R
Weight	0,86 kg	0,86 kg

* depending on room illumination

suppLiEd WitH

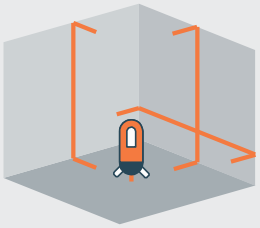
Wall/tripod mount, set of batteries, magnetic target, laser intensive glasses, padded carrying case

art.-No. 530100

OptiONaL

Receiver FR 55 / FR 55-M

art.-No. Fr 55 500510
art.-No. Fr 55-M 500520



geo FENNEL

FL 40-4Liner

Proyector de cruz láser
Línea hz + 3 líneas verticales
(frontal, 90° izq, 90° dcha)

Receptor opcional

the starter model for professionals!

Using the latest laser diode technology to ensure optimum line visibility. 3 laser crosses at 90° to each other connected by a horizontal laser line.

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets
- Tiles: floor, wall
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Exhibitions design and construction: panels, partitions, construction
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, suspended ceilings

FEaturEs

- 1 horizontal and 3 vertical laser lines
- Shut-off of self-levelling function for manual use (slope)
- Locking device for safe transport
- Magnetic connection from instrument to wall mount
- Centering adapter for optimum positioning over a floor point
- Visual and audible alarm when out of level
- Pulse function for use with receiver FR 55/FR 55-M (optional) to extend the working range up to 30 m

Centring adapter

tEcHNicaL data

Self-levelling range	± 3,5°
Accuracy	± 3 mm/10 m
Working range without receiver	20 m*
Working range with receiver	30 m
Operating time	12 h
Power supply	3 x 1,5 V AA Alkaline
Visible laser diodes	4 x 635 nm
Laser class	3R
Weight	1,0 kg

* depending on room illumination

suppLiEd WitH

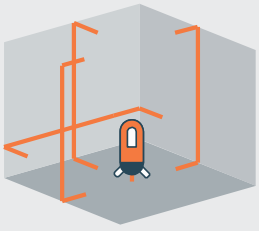
Wall/tripod mount with 5/8" thread, set of batteries, magnetic target, laser intensive glasses, padded carrying case

art.-No. 520000

OptiONaL

Receiver FR 55 / FR 55-M

art.-No. Fr 55 500510
art.-No. Fr 55-M 500520



FL 45 HP

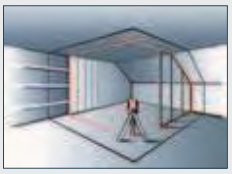
Dos cruces láser a 90° entre ellas
Cruz láser al techo y plomada a suelo.

Receptor opcional

the versatile.

For numerous indoor applications. Two laser crosses at 90° to each other. Laser cross to the ceiling. Plumb down beam to the floor.

Centring adapter



tEcHNicaL data

Self-levelling range	± 3°
Accuracy	± 3 mm/10 m
Laser diode/Laser class	635 nm/3R
Working range without receiver	20 m*
Working range with receiver	30 m
Temperature range	-10 °C to +45 °C
Operating time	12 h
Size	90 x 90 x 146 mm
Weight	1 kg
Dust/water protection	IP 54
Power supply	3 x AA Alkaline

* depending on room illumination

suppLiEd WitH

Padded carrying case, set of batteries, floor / wall mount, mini tripod, magnetic target, laser glasses

art.-No. 520510

OptiONaL

Receiver FR 55 / FR 55-M

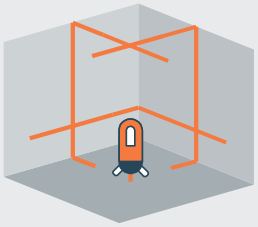
art.-No. Fr 55 500510
art.-No. Fr 55-M 500520

tradEs aNd tasKs

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets
- Tiles: floor, wall
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Exhibitions design and construction: panels, partitions, construction
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, suspended ceilings

FEaturEs

- 2 laser crosses at 90° to each other
- Laser cross to the ceiling
- Plumb down beam
- Transport lock
- Wall / tripod mount magnetically fixed to the instrument
- Wall / tripod mount with centring adapter for optimum positioning over a floor point
- Mini tripod
- Visual and audible alarm when out of level
- Pulse function for use with receiver FR 55/FR 55-M (optional) to extend the working range up to 30 m



geo FENNEL

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets, planning, layout and fixtures for fittings
- Tiles: floor, wall
- Windows/doors: windows, doors, frames and fittings
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Exhibitions design and construction: panels, partitions, construction
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, dry mortarless stone walls, suspended ceilings

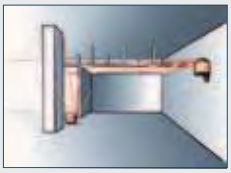
FEaturEs

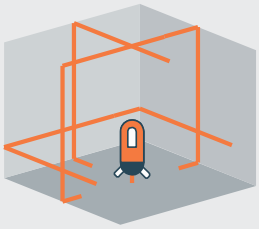
- Dust/water protection to IP 54
- Rubberized housing
- 4 laser crosses at 90° to each other
- Laser cross to the ceiling
- Plumb down beam to the floor
- Self-levelling function can be switched off for manual use
- Use with receiver FR 55 (standard outfit) to extend working range up to 40 m
- Use with floor tripod (standard outfit)
- Use with builder's tripod (optional)
- Adjustable 360° circle with slow motion screw for perfect alignment
- Audible and visible alarm when out of level
- Transport lock

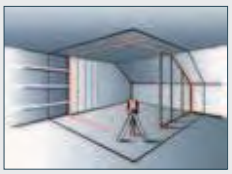
Multi-Liner
FL 55 PLuS

With receiver Fr 55

Universal, robust, versatile, accurate - the ultimate tool for the professional! The latest laser diode technology to ensure optimum line visibility. High accuracy, dust/water protection as well as many other important features for professional use.







tEcHNicaL data

Self-levelling range	± 3,5°
Accuracy	± 3 mm/10 m
with adjusted vial	± 2 mm/10 m
Working range without receiver	20 m*
Working range with receiver	40 m
Operating time	12 h
Power supply	NiMH Alkaline batteries (optional)
Charger can be used as a power supply	yes
Visible laser diodes	6 x 635 nm
Laser class	3R
Weight	1,6 kg

* depending on room illumination

receiver Fr 55

Indication	LCD plus front, side and top LEDs for easy reading
Accuracy	± 1 mm
Tones	3

suppLiEd WitH

Receiver FR 55 with clamp, floor tripod, magnetic target, laser intensive glasses, set of batteries, charger, battery case for alkaline batteries, container

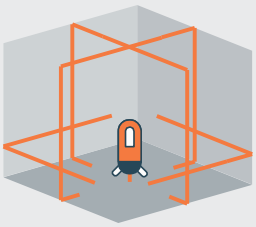
art.-No. 500550

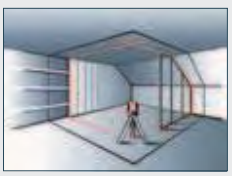
4 cruces láser formando 90° entre ellas
Dos líneas hz abarcando 130° cada una
y cruzando las 4 verticales.
Cruz láser al techo y plomada al suelo.
Receptor incluido!

Maxi-Liner
FL 65

With receiver Fr 55

Projects four vertical lines at 90° to each other and two 130° horizontal lines crossing all four vertical lines. Easily tackles all tasks in interior construction.





tEcHNicaL data

Self-levelling range	± 5°
Accuracy	± 2 mm/10 m
Working range without receiver	20 m
Working range with receiver	40 m
Laser diodes/Laser class	635 nm/3R
Power supply	NiMH
	Alkaline batteries (optional)
Charger can be used as power supply	yes
Temperature range	-10 °C – +45 °C
Weight (instrument only)	1,45 kg

receiver Fr 55

Indication	LCD plus front, side and top LEDs for easy reading
Accuracy	± 1 mm
Tones	3

tradEs aNd tasKs

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets, planning, layout for fixtures and fittings
- Tiles: floor, wall
- Windows/doors: windows, frames, fittings
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cup-boards, floors
- Decorating: wall covering, borders
- Exhibition design and construction: panels, partitions, construction
- Interior design: pictures, curta-ins, lighting
- Surveyor: inspection, measure-ment
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, dry mortarless stone walls, suspended ceilings

FEaturEs

- Dust/water protection IP 54
- 5 laser crosses
- 4 vertical lines at 90° to each other
- 2 horizontal lines
- Laser cross to the ceiling
- Plumb down beam
- Self-levelling function can be switched off for manual use e.g. setting-out slopes
- Use with receiver FR 55 (standard outfit) to extend working range up to 40 m
- Adjustable 360° circle
- Slow motion screw
- Transport lock
- Audible and visible alarm when out of level
- Integrated floor tripod
- 5/8“ thread for standard tripod

suppLiEd WitH

Receiver FR 55 with clamp, floor tripod, magnetic target, laser glasses, batteries and charger, battery case for alkaline batteries, container

art.-No. 581000

geo FENNEL

FL 1000

state-of-the-art.

A new generation of multi-functional laser that redefines innovation. All the jobs you did in the past with two or three instruments can now be performed with the FL 1000. Designed to be simple to use, even complex surveying tasks can be achieved efficiently and cost effectively.

FL 1000 the ultimate tool for interior construction! Integrates all the advantages of line lasers and rotating lasers into one instrument. A two speed rotating laser, four vertical lines at 90° to each other, laser cross to the ceiling, plumb down beam to the floor, used as clearly visible line laser or in pluse mode. With a 360° adjustable circle, the rotating laser has an automatic TILT function, manual slope setting on two axes and a scanning function.

Even for the most complicated and specialised applications. The whole laser plane can, for example, be tilted manually if the object to be measured does not stand level – such as in the interior construction of ships.

The FR 10 receiver allows you to detect either the rotating beam or the laser lines (in normal or pulse mode) with the one device. Remote control function can be switched off which avoids disturbances through other remote controls.

tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets, planning, layout for fixtures and fittings
- Floor laying: height construction and control
- Prefabricated construction: alignment, measurement, control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Carpenter: shelves, cupboards
- Dry mortarless construction: suspended ceilings, stud wall construction
- Boat building: int

FEaturEs

- Electronic self-levelling
- Horizontal visible rotating laser beam
- 4 vertical laser lines at 90° to each other
- Laser cross to the ceiling
- Plumb down beam
- Tilt-function, slope setting
- Combi-receiver for rotating and line beams
- Remote control
- Adjustable 360° circle
- Slow motion screw
- Automatic shut-off/audible alarm when out of level
- Integrated floor tripod 5/8“ thread for builders’ tripod

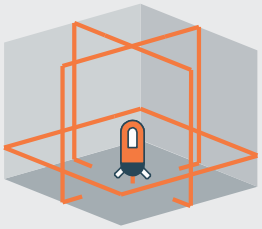
Combina líneas láser + rotación láser

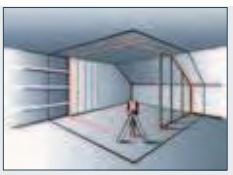
Rayo visible de rotación horizontal

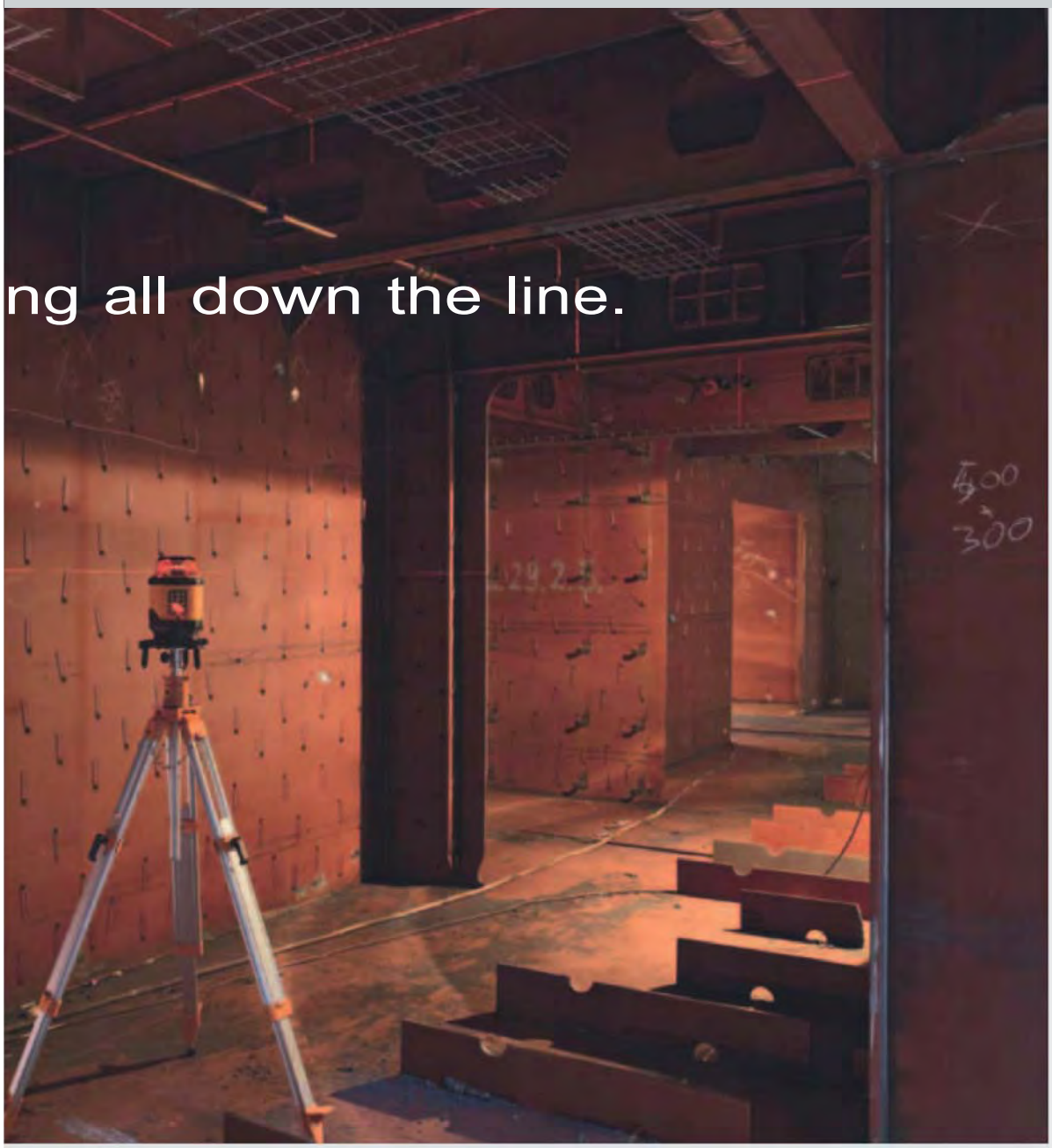
4 líneas láser verticales formando 90° entre ellas

Cruz láser al techo y plomada al suelo

Receptor incluido!







tEcHNicaL data

Self-levelling range	± 5°
Power supply	NiMH/Alkaline
Operating time	10 h
Charger = power supply	yes
Laser diode/Laser class	635 nm/3R
Temperature range	-10 °C – +40 °C
Weight	2,85 kg
Dust/water protection	IP 54
rotating laser	
Accuracy	± 1 mm/10 m
Gradual slope setting in X and Y axis	± 5° (± 9%)
TILT-function	yes
Working range without receiver Ø	40 m*
Working range with receiver Ø	200 m
Scanning without receiver	35 m*
Scanning range	10/30/60°
Rotating speed rpm	200, 500
Line laser	
Accuracy	± 2 mm/10 m
Working range without receiver	20 m*
Working range with receiver	60 m

* depending on room illumination

suppLiEd WitH

Combi-receiver FR 10, rechargeable batteries, power supply, magnetic target, laser intensive glasses, remote control, hard case

art.-No. **585000**

geo FENNEL

tradEs aNd tasKs

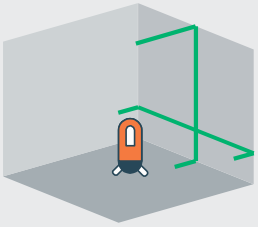
- Electrical: conduit, trunking, switches, sockets
- Tiles: wall
- Plumbing, heating: pipes, radiators
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Decorating: wall covering, borders
- Renovation: cupboards, shelves
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, mesasurement

FEaturEs

- Green laser cross
- Fully automatic self-levelling
- Locking device for safe transport
- Visual and audible alarm when out of level
- 360° base
- Self-levelling function can be switched off for manual use
- Detachable multi-functional mount
- Base and side magnets
- Thread on instrument and mount (5/8" and 1/4")

FLg 40-green

A bright clear laser cross is generated by green laser diodes for improved visibility under difficult conditions. Ideal for working in bright surroundings.



tEcHNicaL data

Self-levelling range	± 3,5 °
Accuracy	± 3 mm/10 m
Working range	20 m
Temperature range	0 °C – +40 °C
Power supply	NiMH
Operating time rechargeable batteries	8 h
Charger = power supply	yes
Laser diode/Laser class	532 nm/3R
Laser output power	< 5mW
Weight	1,1 kg

suppLiEd WitH

Multi-functional mount, rechargeable battery, charger, target, laser glasses, hard case

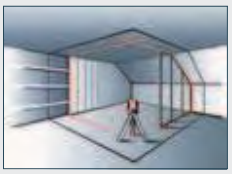
art.-No. 543000

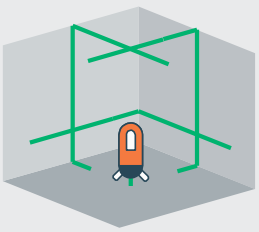
SuMMary
croSS LaSErS

	Vertical lines	Horizontal lines	Plumb down beam	Accuracy/10 m	Dust/water protection	Receiver	Working range without receiver (radius)	Working range with receiver (radius)	Power supply	Page
FL 40-Pocket II	1	1	-	±3 mm	-	optional	10 m	30 m	Alkaline	16
FL 40-Pocket II - HP	1	1	-	±3 mm	-	optional	20 m	30 m	Alkaline	16
FLG 40-Green	1	1	-	±3 mm	-	-	20 m	-	Alkaline	24
FL 40-3Liner	2	1	-	±3 mm	-	optional	10 m	30 m	Alkaline	17
FL 40-3Liner - HP	2	1	-	±3 mm	-	optional	20 m	30 m	Alkaline	17
FL 40-4Liner	3	1	-	±3 mm	-	optional	20 m	30 m	Alkaline	18
FL 45 - HP	2	1	yes	±3 mm	IP 54	optional	20 m	30 m	Alkaline	19
FLG 55-Green	2	1	yes	±2 mm	IP 54	-	20 m	-	Li-Ion	25
FL 55 PLUS	3	1	yes	±2 mm	IP 54	included	20 m	40 m	NiMH	20
FL 65	4	2 x 130°	yes	±2 mm	IP 54	included	20 m	40 m	NiMH	21
FL 1000-Line laser	4	-	yes	±2 mm	IP 54	included	20 m	60 m	NiMH	22 and 23
FL 1000-Rotating laser	-	360°	-	±1 mm	IP 54	included	20 m	100 m	NiMH	22 and 23

FLg 55-green

Bright clear laser lines are generated by green laser diodes for improved visibility under difficult lighting conditions. Ideal for working in bright surroundings.





tradEs aNd tasKs

- Floor covering: carpet, wood, hard tiles
- Electrical: conduit, trunking, switches, sockets, planning layout, fixtures and fittings
- Tiles: floor, wall
- Windows/doors: windows, door frames and fittings
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cup-boards, floors
- Decorating: wall covering, borders
- Exhibition design and construction: panels, partitions, construction
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measure-ment
- Carpenter: shelves, cut edges
- Dry mortarless construction: aligning tracks and profiles, dry mortarless stone walls, suspended ceilings

FEaturEs

- Self-levelling
- 2 laser crosses at 90° to each other
- Laser cross to the ceiling
- Plumb down beam
- Self-levelling function can be switched off for manual use e.g. setting-out slopes
- Transport lock
- Audible and visible alarm when out of level
- Magnetic connection of instru-ment to wall/tripod mount
- Wall/tripod mount with centring adapter for optimum positioning over a floor point
- Mini tripod
- 5/8“ connection for use with standard tripod

tEcHNicaL data

Self-levelling range	± 5°
Accuracy	± 2 mm/10 m
Working range	20 m
Laser diode/Laser class	532/3R
Power supply	Li-Ion
Operating time	5 h
	Alkaline batteries (optional)
Charger can be used as power supply	yes
Temperature range	0 °C – +40 °C
Dust/water protection	IP 54
Weight (instrument only)	1,05 kg

suppLiEd WitH

Wall/tripod mount, mini tripod, magnetic target, laser glasses, batteries and charger, battery case for alkaline batteries, container

art.-No. 500100

geo FENNEL

Application

FL 500Hv-g

Laser manual de rotación
Para uso horizontal y vertical.
Plomada vertical permanente.

FL 30

For horizontal and vertical use.

A robust manual laser quick to set-up and easy to operate. Easy set-up with two bubbles. For horizontal and vertical measurements. Scanning, laser point mode and permanent 90° beam to zenith. The ideal laser for indoor applications, suitable for simple outdoor jobs.

tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets
- Floor laying: height construction and control
- Tiles: wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: posts, fences, beams, structures
- Plumbing, heating: cables, pipes, radiators
- Interior design: pictures, curtains, lighting
- Painting and decorating: wall covering, borders
- Interior works: levelling

FEaturEs

- For horizontal and vertical measurements
- Visible laser beam
- Horizontal easy setting with 2 bubbles
- Scanning function (2 step) and laser point mode
- Multi-stage rotating beam
- Permanent 90° beam to zenith

suppLiEd WitH

Padded carrying case, floor/tripod mount, set of batteries

art.-No. 271000

Maletín con accesorios

30 SEt

FL 30 with all the necessary accessories to start working immediately!

Consists of Elevating tripod, wall mount, magnetic target, laser glasses for better visibility of the laser beam, 2,45 m levelling staff and a receiver that all fit neatly into the handy carrying case.

tEcHNicaL data

Accuracy	± 2 mm/10 m
Working range without receiver Ø	15 m*
Working range with receiver Ø	120 m
Rotating speed	150 – 300 rpm adjustable
Laser diodes/Laser class	635 nm/2
Scan angle	0°, 5°, 10°
Temperature range	-10 °C – +45 °C
Dust/water protection	IP 54
Dimensions w/o mount	90 x 90 x 120 mm
Weight	0,74 kg
Power supply	4 x AA Alkaline

* depending on room illumination

suppLiEd WitH

Container, floor/tripod mount, set of batteries, 2,45 m levelling staff, elevating tripod with max. height of 1,58 m, receiver with clamp, magnetic target, laser glasses, height adjustable wall mount

art.-No. 271500

tradEs aNd tasKs

- Excavation: surface/grade measurement and control
- Floor laying: height construction and control
- Ground works: sports fields, car parks
- Landscape gardening and architecture: garden, paving, paths
- Building: foundations and concrete flooring, cutting checks
- Civil engineering: trench/ footings depth control, groundwork and concrete flooring

FEaturEs

- Zonal control with electronic beam screen avoids spurious measurements caused by crossing laser planes and reflections - increases site safety
- Robust and dust/water protected housing to IP 66, rubberized protection and metal top
- Large working range and high accuracy of ± 0,75 mm / 100 m
- Automatic shut-off when out of self-levelling range
- Manual slope setting of X and Y axes up to ± 5°
- 360° reception range of remote control
- VWS-function

suppLiEd WitH

Receiver FR 45 with clamp, Li-Ion rechargeable battery with charger, battery case for alkaline batteries, remote control, container

art.-No. 211000

FL 110Ha

the standard for horizontal laser levels!

The FL 110HA is a real professional in its business: Compact and robust with a rubberized housing and metal cover for effective site protection. Easy and intuitive operation.

High performance: Li-Ion technology for continuous operation, V-W-S function (vibration-wind-security), automatic TILT function, zonal control, large working range, high accuracy, the FL 110HA does not lack anything.

Rotativo autonivelante hz con gran alcance y precisión. Control de zona para evitar interferencias de otros lásers. Inclinación manual de los ejes X e Y.

tEcHNicaL data

Self-levelling range	± 5°
Accuracy	± 0,75 mm/10 m
Working range with receiver FR 45 Ø	600 m
Working range with receiver FMR 700 Ø	650 m
Slope setting in X and Y axis	± 5° (9 %)
Rotating speed	800 rpm
Power supply/Operating time	Li-Ion / 40 h
	6 x AA Alkaline / 40 h
Temperature range	-10 °C – +45 °C
Laser diode/Laser class	635 nm/2
Weight	2,1 kg
Dust/water protection	IP 66

Láser autonivelante rotativo horizontal y vertical. Autonivelación instantánea. Plomada a zénit permanente.

FL 210a and FLg 210a-green

¡Receptor incluido!

Horizontal and vertical lasers for interior and exterior applications. Two new models with improved self-levelling, rotational accuracy and improved technical construction. Instant self-levelling makes these lasers ideal when applications necessitate frequent positional changes.

- New innovative design ensures instant self-levelling with improved stability
- Increased horizontal accuracy
- Floor / wall mount integrated into housing
- Detachable battery compartment can be charged separately
- Intelligent battery charger
- Improved operational safety: Rotation only possible when compensator is unlocked

A highly visible laser beam, scanning functions, permanent 90° beam to zenith, automatic shut-off when misaligned and a comprehensive set of accessories make these models ideal for the all-rounder.

FLg 210a-green

Self-levelling rotating laser for interior horizontal and vertical applications. Similar functions to the FL 210A but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances. **New: now includes receiver FRG 45-Green.**

tEcHNicaL data	FL 210a	FLg 210a-grEEN
Self-levelling range	± 3,5°	± 3,5°
Accuracy horizontal	± 1 mm/10 m	± 1 mm/10 m
Accuracy vertical	± 1,5 mm/10 m	± 1,5 mm/10 m
Working range with receiver Ø	400 m	400 m
Rotating speed	150, 200, 250, 300 rpm	150, 200, 250, 300 rpm
Laser diodes/Laser class	635 nm/2	532 nm/3R
Scan angle	0°, 20°, 40°	0°, 20°, 40°
Temperature range	-10 °C – +45 °C	0 °C – +40 °C
Dust/water protection	IP 66	IP 66
Dimensions	180 x 162 x 202 mm	180 x 162 x 202 mm
Weight (instrument only)	2,8 kg	2,8 kg
Power supply	4 x C NiMH*	4 x C NiMH*

* with 6,4 V intelligent charger, battery can be charged externally, alkaline batteries can be used alternatively

tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets, planning, layout for fixtures and fittings
- Floor laying: height construction and control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, post, fences, beams, structures, balustrade, handrails, edging
- Plumbing, heating: cables, pipes, radiators
- Building: foundations and concrete flooring, cutting checks, masonry, walls
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Interior design: pictures, curtains, lighting
- Surveyor: inspection, measurement
- Decorating: wall covering, borders
- Dry mortarless construction: aligning tracks and profiles, dry mortarless stone walls, suspended ceilings

FEaturEs

- Instant self-levelling
- Horizontal self-levelling with automatic shut-off and audible alarm when out of tolerance
- Easy vertical set-up with one foot screw
- Variable rotating speed
- Scanning and laser dot mode
- Permanent 90° beam to zenith
- NiMH batteries
- Can be used with alkaline batteries
- Dust/water protection IP 66

suppLiEd WitH FL 210a

Receiver FR 45 with clamp, remote control, rechargeable batteries/charger, floor/wall mount, magnetic target, laser glasses, carrying case

art.-No. 291500

suppLiEd WitH FLg 210a-grEEN

Remote control, rechargeable batteries/charger, floor/wall mount magnetic target, laser glasses, carrying case, receiver FRG 45-Green with clamp

art.-No. 291700

geo FENNEL

FL 240Hv

Multi-functional rotating laser - ideal for numerous applications!

Láser rotativo, autonivelante en horizontal y vertical. Punto láser, plomada permanente a zénit. Excelente protección contra polvo y agua.

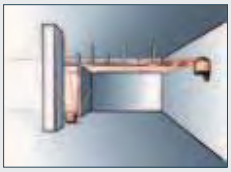
Versatile and easy to use. Fully automatic self-levelling in horizontal and vertical. A feature packed laser designed for the interior professional with a dust and water protection making it also suitable for outdoor use. Variable scanning and laser point mode for optimum beam visibility.

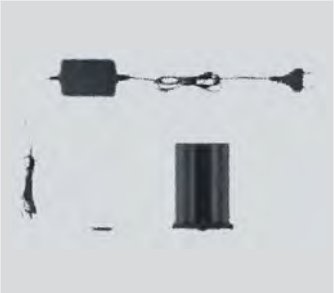
FEaturEs

- Visible laser beam
- 2 rotating speeds
- Variable scanning mode
- Laser point mode
- Slope setting up to ± 5° (± 9%) in X and Y axis
- Permanent 90° plumb beam
- TILT function
- Remote control screen (on/off)
- Closed top cover housing offers excellent protection against dust and water

tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets, planning, layout for fixture and fittings
- Floor laying: height construction and control
- Prefabricated construction: alignment, measurement, control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, fences, beams, edging
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Building: foundations, concrete flooring, masonry, walls, cutting checks
- Civil engineering: groundwork, concrete flooring, control of profiles
- Dry mortarless construction: suspended ceilings, stud wall construction





Basic sEt

Remote control, alkaline batteries, adjustable wall and ceiling mount, laser glasses, magnetic target, container

Set básico: sin receptor y baterías alcalinas

art.-No. 244100

OptiONaL

Rechargeable battery (NiMH), intelligent charger

art.-No. 250100

OptiONaL

Receiver FR 45 with clamp

art.-No. 252000

cOMpLEtE sEt

Receiver FR 45 with clamp, remote control, rechargeable battery (NiMH), intelligent charger, battery case for alkaline batteries, adjustable wall and ceiling mount, laser glasses, magnetic target, container

Set completo: con receptor y batería recargable

art.-No. 244000

Rayo verde!

Set completo:
con receptor y batería recargable

Set básico:
sin receptor y baterías alcalinas

FLg 240Hv-green

Horizontal and vertical laser for interior applications. Similar functions to the FL 240HV but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances.

tECHNICAL data	FL 240HV	FLg 240HV-gREEN
Self-levelling range	± 5°	± 5°
Accuracy horizontal	± 1 mm/10 m	± 1 mm/10 m
Accuracy vertical	± 1,5 mm/10 m	± 1,5 mm/10 m
Working range with receiver Ø	500 m	400 m
Scanning w/o receiver	30 m*	40 m*
Rotating w/o receiver Ø	40 m*	50 m*
Scanning modes	2 x	2 x
Slope setting in X and Y axis	± 5° (± 9 %)	± 5° (± 9%)
Rotating speed rpm	200, 500	200, 500
Operating time/Power supply	24 h (NiMH) 40 h (Alkaline)	24 h (NiMH) 40 h (Alkaline)
Temperature range	-10 °C – +45 °C	0 °C– +40 °C
Laser diode/Laser class	635 nm/3R	532 nm/3R
Dust/water protection	IP 54	IP 54
Weight (instrument only)	1,95 kg	1,95 kg

* depending on room illumination

cOMpLEtE sEt

Receiver FRG 45 with clamp, remote control, rechargeable battery (NiMH), intelligent charger, battery case for alkaline batteries, adjustable wall and ceiling mount, laser glasses green, magnetic target green, container

art.-No. 244500

Basic sEt

Remote control, alkaline batteries, adjustable wall and ceiling mount, laser glasses green, magnetic target green, container

art.-No. 244600

OptiONaL

Rechargeable battery (NiMH), intelligent charger

art.-No. 250100

OptiONaL

Receiver FRG 45 with clamp

art.-No. 252300

tEcHNicaL data

Self-levelling range	± 5°
Accuracy horizontal	± 1 mm/10 m
vertical	± 1,5 mm/10 m
Working range with receiver Ø	500 m
Not rotating without receiver	approx. 50 m*
Scanning without receiver	approx. 30 m*
Rotating without receiver Ø	approx. 40 m*
Gradual slope setting X and X axis	± 5° (± 9%)
Rotating speed rpm	120, 500
Operating time	24 h (NiMH)
	48 h (Alkaline)
Power supply	4 x C 1,5 NiMH
Temperature range	-20 °C – +50 °C
Laser diode/Laser class	635 nm / 3R
Dust/water protection	IP 65
Weight	1,9 kg

* depending on room illumination

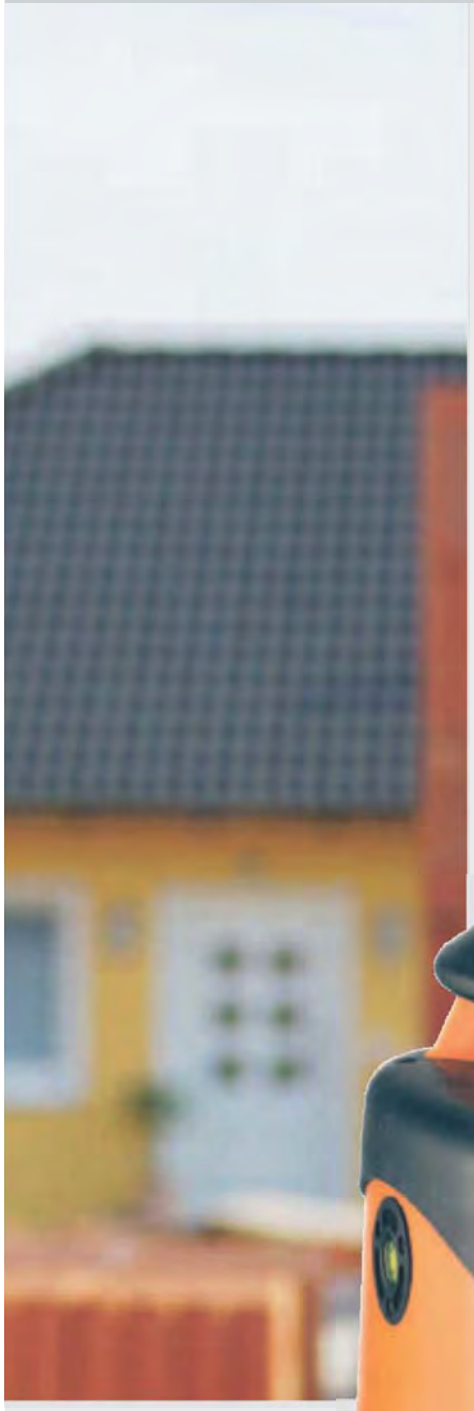
suppLiEd WitH

Receiver FR 45 with clamp for levelling staff, remote control, re-chargeable batteries, charger, floor/wall mount (integrated), magnetic target, laser glasses and container

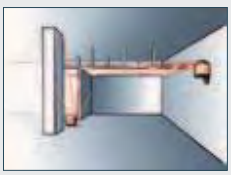
art.-No. **241000**

FL 250va-N

Horizontal and vertical, fully automatic self-levelling. Compact and robust. Slope and scanning function. The ideal multi-functional laser for indoor and outdoor use.



Láser autonivelante rotativo, hz y vertical. Punto láser, función scan, inclinación ejes X e Y. Plomada permanente a zénit.



tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets, planning, layout and fixtures for fittings
- Floor laying: height construction and control
- Prefabricated construction: alignment, measurement, control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, posts, fences, beams, structures, balustrade, handrails, edging
- Warehouse construction: piling, beams, facades
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Building: foundations and concrete flooring, masonry, walls, cutting checks, prefabricated and Ferro concrete construction, steel and concrete piling
- Surveyor: inspection, measurement
- Civil engineering: groundwork and concrete flooring, control of profiles
- Dry mortarless construction: suspended ceilings, stud wall construction

FEaturEs

- Visible laser beam
- Slope setting up to ± 5° in X and Y axis
- Two rotating speeds
- Variable scanning mode
- Laser point mode
- Permanent 90° plumb beam to ceiling
- TILT-function
- Use with NiMH rechargeable battery (standard) or Alkaline batteries
- Dust/water protection to IP 65

geo FENNEL

tradEs aNd tasKs

- Electrical: conduit, trunking, switches, sockets, planning, layout and fixtures for fittings
- Floor laying: height construction and control
- Prefabricated construction: alignment, measurement, control
- Tiles: floor, wall
- Windows/doors: windows, frames and fittings
- Landscape gardening and architecture: garden, paving, paths, posts, fences, beams, structures, balustrade, handrails, edging
- Warehouse construction: piling, beams, facades
- Plumbing, heating: cables, pipes, radiators
- Air conditioning: raised floor for air conditioning
- Shop fitting and kitchen construction: shelves, cupboards, floors
- Exhibitions design and construction: panels, partitions, construction
- Building: foundations and concrete flooring, masonry, walls, cutting checks, prefabricated and Ferro concrete construction, steel and concrete piling
- Surveyor: inspection, measurement
- Civil engineering: groundwork and concrete flooring, control of profiles
- Dry mortarless construction: suspended ceilings, stud wall construction

FEaturEs

- Visible laser beam
- Adjusted slope setting (manual) up to ± 5° (± 9 %) in X and Y axis
- Single slope setting up to ± 5° (± 9 %)
- 2 Rotating speeds
- Variable scanning and laser point mode
- Permanent 90° beam to zenith
- V-W-S function combined with TILT function
- Automatic TILT function
- Remote control screen
- NiMH batteries
- Can be used with alkaline batteries
- Li-Ion battery technology
- Intelligent charger
- Dust/water protection IP 66

suppLiEd WitH

Receiver FR 45 with clamp, remote control, rechargeable batteries/charger, floor mount, magnetic target, laser glasses, carrying case

art.-No. **242000**

Láser rotativo autonivelante en hz y vertical. Ajuste manual de inclinaciones en ejes X e Y. Plomada permanente a zénit. Función V-W-S (anula pequeñas vibraciones)

FL 260va

Fully automatic horizontal and vertical laser. Compact ergonomic design and intuitive operation.
A multi-functional laser for interior and exterior applications.

- Improved technical design and accuracy
- Enhanced scanning functions with smaller steps and enlarged range
- Advanced slope setting functions:
  - Horizontal:
    - Manual slope setting in X and Y axis up to ± 5° (± 9 %)
    - One axis (X or Y) manual slope, 2nd axis self-levelled
  - Vertical:
    - Manual slope setting in X and Z axis
    - X axis manual slope, Y axis self-levelled
- V-W-S function (Vibration-Wind-Security) – rotation will not be stopped due to light ground and wind vibrations (combined with TILT function)
- Remote control screen – remote control function can be switched off. Can be used to avoid interference with other instruments on site.
- Li-Ion battery technology: 100 % power until fully discharged, no memory effect, no self-discharge, top-up charging possible
- Intelligent charger
- Integrated floor mount with centring mark

Laser autonivelante servo-asistido

Rayo verde!
Incluye receptor FRG45 Verde.

FLg 260va-green

Fully automatic horizontal and vertical laser for interior applications. Similar functions to the FL 260VA but incorporating a green laser diode for improved visibility under difficult measuring conditions such as bright surroundings and long distances. **New: now includes receiver FRG 45-Green.**

tEcHNicaL data	FL 260Va	FLg 260Va-grEEN
Self-levelling range	5°	5°
Accuracy horizontal	± 0,5 mm/10 m	± 0,5 mm/10 m
Accuracy vertical	± 1,0 mm/10 m	± 1,0 mm/10 m
Working range with receiver Ø	600 m	400 m
Rotating speed	800, 300 rpm	800, 300 rpm
Laser diode/Laser class	635 nm/3R	532 nm/3R
Scan angle	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°
Manual slope setting X and Y axis	± 5° (± 9 %)	± 5° (± 9 %)
Single slope	One axis tilted, other axis self-levelled	
Temperature range	-10 °C – +45 °C	0 °C – +40 °C
Dimensions	219 x 160 x 202 mm	219 x 160 x 202 mm
Weight	2,6 kg	2,6 kg
Dust/water protection	IP 66	IP 66
Power supply	6,4 V*	6,4 V*

* with 6,4 V intelligent charger, battery can be charged externally, alkaline batteries can be used alternatively

suppLiEd WitH

Receiver FRG 45-Green, remote control, rechargeable batteries, charger, floor mount, magnetic target, laser glasses, carrying case

art.-No. 242500

geo FENNEL

tradEs aNd tasKs

- Excavation: surface/grade measurement and control
- Prefabricated construction: alignment, measurement, control
- Ground works: sports fields, car parks
- Landscape gardening and architecture: garden, paving, paths
- Warehouse construction: piling, beams, facades
- Building: foundations and concrete flooring, cutting checks
- Civil engineering: trench/footings depth control, groundwork and concrete flooring

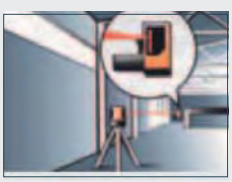
Láser rotativo completamente autonivelante, horizontal y vertical con ajuste digital de inclinación en ambos ejes hasta un 10%. Función V-W-S. Plomada permanente a zénit.

FL 500Hv-g

Horizontal and vertical Dual Axis Grade Laser.

a new generation of multi-functional fully automatic self-levelling dual grade laser designed for exterior and interior applications.

- Fully automatic horizontal and vertical self-levelling
- Slope functions:
  - Horizontal:
    - Digital grade setting of X and Y axis up to ± 10%
    - Manual slope setting of X and Y axis
  - Vertical:
    - Direction of X axis can be set up to ± 10% with Y axis self-levelled
    - Direction of X and Z axis can be set manually
- VWS function (Vibration-Wind-Security);
  Rotation will not be stopped due to light ground and wind vibrations
  (VWS function is combined with TILT function)
- Fully functional 9 Channel 2 way RF remote control
- Li-Ion battery technology: 100 % power until fully discharged, no memory effect, no self-discharge, top-up charging possible
- 4-step scanning function
- Illuminated display



suppLiEd WitH

Receiver FR 45 with clamp, 2 way RF remote control, Li-Ion batteries and charger, vertical mount, telescopic viewfinder, container

art.-No. 231000

FEaturEs

- Dual Axis Laser
- Horizontal and vertical
- Digital grade adjustment
- Monitored grade
- TILT function
- VWS function
- 90° beam to zenith
- Illuminated display
- 2 way RF remote control
- Manual function
- 4-step scanning function
- Operation with rechargeable Li-Ion or alkaline batteries
- Dust/water protection IP 66

FLg 500Hv-g green

Horizontal and vertical Dual Axis Grade Laser. With the option of green beam technology to enhance laser line visibility in difficult light conditions and long distances.

tEcHNicaL data	FL 500HV-g	FLg 500HV-g grEEN
Self-levelling range	± 8°	± 8°
Accuracy Hz	± 0,5 mm/10 m	± 0,5 mm/10 m
Accuracy V	± 1 mm/10 m	± 1 mm/10 m
Working range with receiver Ø	700 m	400 m
Laser diode/Laser class	635 nm/3R	532 nm/3R
Scanning ranges	0°, 10°, 45°, 90°, 180°	0°, 10°, 45°, 90°, 180°
Horizontal slope setting		
X axis	± 10,000 %	± 10,000%
Y axis	± 10,000 %	± 10,000%
X and Y axis	∑ ± 14 %	∑ ± 14%
Vertical slope setting		
X axis	± 10,000 %	± 10,000%
Y(Z) axis	horizontal self-levelled	horizontal self-levelled
Rotating speed	300, 600 rpm	300, 600 rpm
Operating time	40 h	40 h
Power supply	intelligent / Li-Ion	intelligent / Li-Ion
	Alkaline batteries (optional)	Alkaline batteries (optional)
Remote control range	100 m	100 m
Remote control channels	9	9
Temperature range	-10 °C – +45 °C	0 °C – +40 °C
Dust/water protection	IP 66	IP 66
Weight (instrument only)	3,85 kg	3,85 kg

suppLiEd WitH

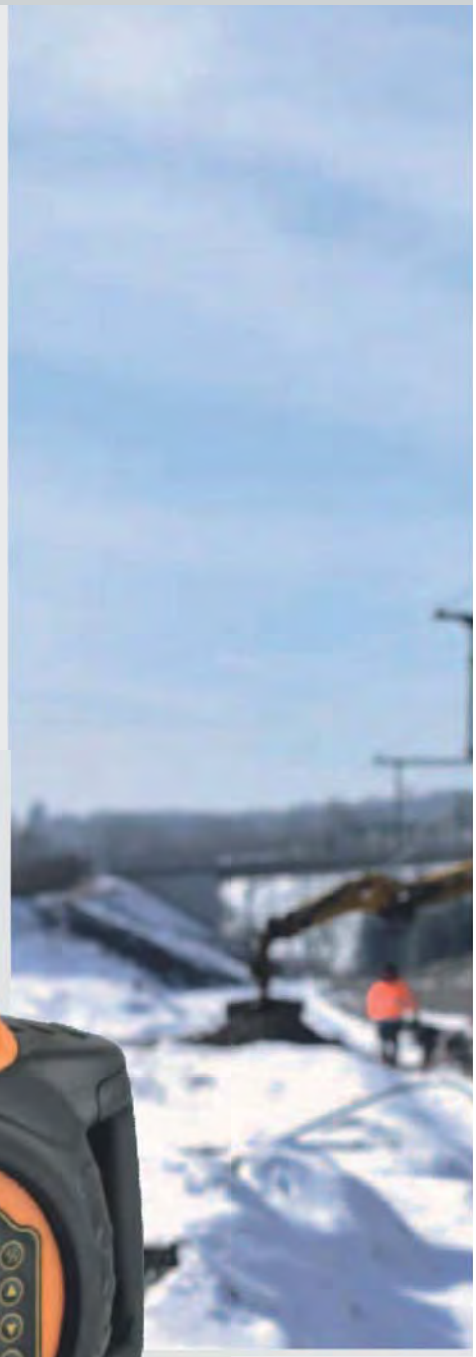
Receiver FRG 45-Green with clamp, 2 way RF remote control, Li-Ion batteries and charger, vertical mount, telescopic viewfinder, container

art.-No. 231500

geo FENNEL

FL 550H-g

A rugged high performance fully automatic self-levelling dual grade laser. Designed for excavation, ground works and use with machine control systems for ultimate grade control



tradEs aNd tasKs

- Excavation: surface/grade measurement and control
- Ground works: sports fields, car parks
- Landscape gardening and architecture: garden, paving, paths
- Building: foundations and concrete flooring, cutting checks
- Civil engineering: trench/footings depth control, groundwork and concrete flooring

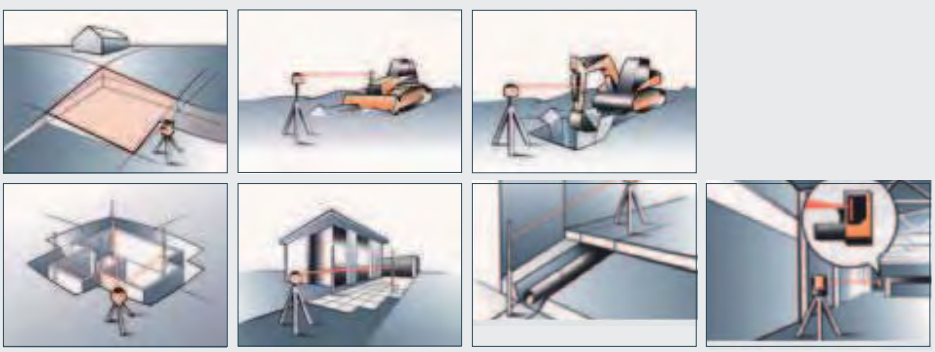
FEaturEs

- Dual Axis Laser
- Steep grade laser
- Digital grade adjustment
- Monitored grade
- TILT function
- VWS function
- 90° beam to zenith
- Illuminated display
- 2 way RF remote control
- Manual function
- Operation with rechargeable Li-Ion or alkaline batteries
- Dust/water protection IP 66

the new top of the range dual grade laser can be used for grades up to 25%

- Horizontally fully automatic self-levelling
- Digital grade setting of X and Y axis
- Steep grade setting in +Y axis up to 25% using steep grade adapter
- Manual grade setting of X and Y axis
- VWS function (Vibration-Wind-Security); Rotation will not be stopped due to light ground and wind vibrations (VWS function is combined with TILT function)
- Fully functional 9 Channel 2 way RF remote control
- Li-Ion battery technology: 100% power until fully discharged, no memory effect, no self-discharge, top-up charging possible
- Zonal control with electronic beam screen (masking)
- Illuminated display

Láser autonivelante horizontal con ajuste digital o manual de inclinación en ejes X e Y. Ajuste del eje Y hasta un 25% pdte. Plomada permanente a zénit. Control de zona para evitar interferencia



suppLiEd WitH

Receiver FR 45 with clamp; 2 way RF remote control, Li-Ion batteries and charger, telescopic viewfinder, steep grade adapter, container

art.-No. 231000

tEcHNicaL data

Self-levelling range	± 8°
Accuracy horizontal	± 0,5 mm/10 m
Accuracy grade	± 1 mm/10 m
Working range with receiver Ø	700 m
Laser diode/Laser class	635 nm/3R
Slope setting	
X axis	± 10,000%
Y axis	-1,000% to +25,000%
X and Y axis	∑ ± 20%
Rotating speed	600, 1000 rpm
Operating time	40 h
Power supply	intelligent / Li-Ion
	Alkaline batteries (optional)
Remote control range	100 m
Remote control channels	9
Temperature range	-10 °C – +45 °C
Dust/water protection	IP 66
Weight (instrument only)	3,85 kg

Positioning Line Laser

FPL L

tradEs aNd tasKs

· I. e. marking of reference lines for cutting wood, stones, steel, concrete

FEaturEs

· Projects a clearly visible laser line
· Power supply 220V with switch and plug
· Multi-functional mount (rotatable and swivelling)

Positioning lasers are especially suited for use in m and in trade for marking and positioning.

tEcHNicaL data	FpL L-5	FpL L-10	FpL L-20
Visible laser line	red	red	red
Laser wave length	635 nm	635 nm	635 nm
Integrated laser diode	5 mW	10 mW	20 mW
Laser output power	< 1 mW	< 5 mW	< 5 mW
Laser class	2M	3R	3R
Focusing	0 - 10 m focusable	0 - 10 m focusable	0 - 10 m focusable
Fan angle	84°	84°	84°
Temperature range	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C
Dimensions (without mount)	Ø 22.5 x 89 mm	Ø 22.5 x 89 mm	Ø 22.5 x 89 mm
art.-No.	519005	519010	519020

Positioning cross L

FPL c

tradEs aNd tasKs

· I. e. marking of reference lines for cutting wood, stones, steel, concrete

FEaturEs

· Projects a clearly visible laser cross
· Power supply 220V with switch and plug
· Multi-functional mount (rotatable and swivelling)

tEcHNicaL data	FpL c-5	FpL c-10	FpL c-20
Visible laser cross	red	red	red
Laser wave length	635 nm	635 nm	635 nm
Integrated laser diode	5 mW	10 mW	20 mW
Laser output power	< 1 mW	< 5 mW	< 5 mW
Laser class	2M	3R	3R
Focusing	10 m	10 m	10 m
Fan angle	120°	120°	120°
Termperature range	-10 °C – +40 °C	-10 °C – +40 °C	-10 °C – +40 °C
Dimensions (without mount)	Ø 41 x 55 mm	Ø 41 x 55 mm	Ø 41 x 55 mm
art.-No.	519105	519110	519120

geo FENNEL

FkL-50

Láser de tuberías

Self-levelling pipe laser. A rugged waterproof construction for long lasting performance and reliability in the toughest conditions.

tradEs aNd tasKs

- Civil engineering: Sewer pipes, drainage
- Ground works: sports fields, car parks

FEaturEs

- Robust aluminium housing
- Easy intuitive operation
- Fully automatic self-levelling
- Automatic beam centring
- Laser start point indication
- Clear easy to read illuminated LCD display
- Integrated rechargeable batteries
- Remote control

suppLiEd WitH

Fittings

1 Target frame with target
2 Container
3 Pipe Laser
4 Remote control
5 Leg set DN 500
6 Leg set DN 400
7 Leg set DN 300
8 Leg set DN 200
9 Leg set DN 150
10 Adapter for 3 leg set up
11 Charger
12 Batterie case for alkaline batteries
13 Target DN 400 - 500

FKL-50

Remote control, NiMH batteries, charger, battery case for alkaline batteries, adapter for 3 leg set up, leg sets DN 150, 200, 300, 400, 500, target, container

art.-No. 455000

tEcHNicaL data

Laser class	3R
Laser diode power	< 2 mW
Beam diameter	12 mm
Working range	up to 200 m
Grade range	-20 % – +40 %
Self-levelling range	± 5°
Minimum display reading	0,001 %
Horizontal accuracy	± 5 mm/100 m
Left/right scanning	± 4°
Operating time	24 h (NiMH)
Temperature range	-20 °C – +50 °C
Power supply	4 x D 8000 mAh NiMH (optional 4 x D Alkaline)
Remote control range front/back	60 m/10 m
Dust/water protection	IP 68
Dimensions	Ø 132 mm, length 380 mm
Weight (laser only)	5 kg
Weight set	11 kg

FkL-80/81

Láser de tuberías

The FKL-80 emits an automatically levelled or defined inclined laser beam as reference axis. It can be set up centrically or at a constant distance above the pipe invert.

tradEs aNd tasKs

- Civil engineering: Sewer pipes, drainage
- Ground works: sports fields, car parks

FEaturEs

- Fully automatic
- Automatic levelling
- Banking compensation
- Inclination zeroing
- Direction centring and cut-out in case of undervoltage or jerky movement
- Robust metal housing
- Special laser beam quality
- Brightly illuminated, easily legible LCD display
- Easy handling
- Built-in rechargeable battery
- Menu
- User-friendly infrared remote control

suppLiEd WitH

Basic version

1 Target frame with target DN 150 - 300
2 Transport case, with lock
3 Pipe laser with leg set DN 150
7 Leg set DN 300
8 Leg set DN 250
9 Leg set DN 200
12 Battery charger

comfort version (art.-No. 450300)

4 IR remote control
5 Leg set DN 500
6 Leg set DN 400
10 Adapter for mounting with 3 legs
11 Target DN 400 - 500

tEcHNicaL data

Laser class	2, < 1 mW/diode
Laser	visible red, 635 nm
Beam diameter	at laser 13 mm
Working range	up to 200 m
Inclination range	-10 % up to +40 %
Self-levelling range	-5 % up to +40 %
Reading precision	0,001 %
Permissible deviation	± 0,005 %
Direction setting range	± 5,000 %
Banking compensation	± 4°
Operating time	rechargeable battery up to 26 hours
External power supply	11 to 14 V DC with cable 0117.00
Undervoltage cut-out	yes
Watertight	up to 3,5 m
Temperature range	-10°C up to +50°C
Size/ Weight	Ø 130 mm, length 265 mm / 3 kg
Range IR remote control	to 150 m from front to 18 m from behind
Dust/water protection	IP 67

FKL 81

High power version, max. range up to 500 m, special feature: laser power adjustable in five steps, laser class 3R, laser power < 5mW

art.-No. FKL-80 450000
art.-No. FKL-81 451000

OptiONaL

Comfort package

art.-No. 450300

geo FENNEL

Accesorios

Telescopic rule
Laser EasyFix 5 m

- Telescopic rule with incorporated measuring tape
- Every section can be clamped
- Universal adapter for laser receiver. Receiver can be fixed with on-level mark on top of the rule. The height of the receiver (on-level mark) can be easily read at measuring display
- Maximum length 500 cm
- Retracted length 121,5 cm
- Incorporated circular bubble
- Weight 2,7 kg
- Incl. case

art.-No. 452

Floor-to-ceiling Pillar kS 3

- Floor-to-ceiling pillar (1-leg tripod) to be fixed between floor and ceiling
- 5 sections
- Maximal length 3,40 m
- 5/8” and 1/4” adapter
- Supplied with carrying bag
- The individual poles are equipped with 5/8” threads. This enables them to be screwed onto tripods, if no ceiling surface is available.

art.-No. 520100

Laser intensive glasses

- Laser intensive glasses for better visibility of laser beam

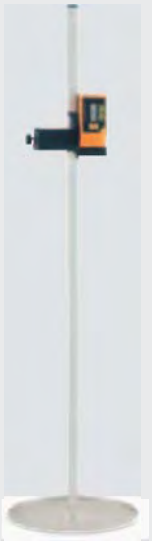
art.-No. (glasses red) 253000
art.-No. (glasses green) 253001

Magnetic target LS 307

- Magnetic target, with cm/inch graduation

art.-No. (target red) 290500
art.-No. (target green) 290501

Screeding Pole



- To attach a laser receiver for checking heights during concrete laying
- Made of aluminium
- Length of square section tube 1,5 m
- Diameter of disc 38 cm
- Weight 1,7 kg

art.-No. 290800

Wall and ceiling Mount
WH 1

- Robust mount for use on walls and ceilings
- Ideal for use indoors e.g. setting out suspended ceilings
- Cm/inch-graduation
- Precise adjustment /alignment with large slow motion wheel
- Incl. bag

art.-No. 290600

Adaptador 5/8" a 1/4"

adapter 5814

- Adapter 5/8“ to 1/4“
- Converts a standard 5/8“ tripod into a 1/4“ fitting

art.-No. 290550

Mordaza para andamios

Scaffold clamp Holder

- For quick centring over the linchpin
- To connect with rotating laser levels, automatic levels, theodolites
- Span approx. 60 mm
- Weight 1,5 kg

art.-No. 320600

Adaptador para S-Digit mini

grade Mount

Dispositivo para inclinaciones

- Set slopes between 0 - 90° for laser levels in manual mode
- Robust construction
- Graduated slow motion screw
- Fits any tripod with 5/8” thread
- With bubble

art.-No. 290700

adapter for S-digit mini

Adapter for connecting S-Digit mini (see page 74) to the Grade Mount. Alllows higher accuracy to be achieved.

example of use

art.-No. 290750

Wall and ceiling mount WH 2

New version with large metal platform suitable for all geo-FENNEL lasers.

example o

Soporte pared-techo

- Platform size 150 x 95 mm
- Robust mount for use on walls and ceilings
- Ideal for indoor use e.g. setting out suspended ceilings
- Cm / inch graduation
- Precise adjustment with large slow motion wheel
- Supplied with carrying bag
- Suitable also for other brands

art.-No. 290610

geo FENNEL

receiver for rotating Lasers
Fr 45 und Frg 45-green

Receptores para láser de rotación

With dual display and clamp for levelling staff, shut-off tone, automatic shut-off, illumination, built-in magnetic strips and vial. Rubberized housing for effective site protection.

tEcHNicaL data	Fr 45	Frg 45-grEEN
Suitable for laser diode	red	green
Indication	2 x LCD	2 x LCD
3-step accuracy	± 10 mm, ± 4 mm, ± 2 mm	± 10 mm, ± 4 mm, ± 2 mm
Power supply	1 x 9 V	1 x 9 V
Signal tones	3	3
Tone can be switched off	yes	yes
Auto-shut-off	yes	yes
Illumination	yes	yes
Weight	0,2 kg	0,2 kg
Dust/water protection	IP 66	IP 66
art.-No.	252000	252300

receiver for rotating Lasers
Fr 66-MM

Indicación digital milimétrica

With digital level indication in millimetres.

tEcHNicaL data	
Indication	2 x LCD - 3 x LED on front
5-step accuracy	0,5 / 1 / 2 / 5 / 10 mm
Measuring units	mm, cm, ft, inch
Power supply	2 x 1,5 V AA Alkaline
Operating time	60+ h
Signal tones	3 (65, 95, 100 dBA)
Tone can be switched off	yes
Auto-shut-off	yes (30 min., 24 h)
Weight	0,54 kg
art.-No.	258000

- Difference between laser plane and “0” level is shown on the display in mm
- Segments of display indication increase / decrease proportionally
- Extremely robust and shock-proof
- Large receiving window (12 cm)
- 5-step accuracy from 0,5 to 10 mm
- Two „0“ positions can be set (automatic recognition through re-set of receiver clamp)
- HOLD-function – reading on display can be held
- Dust/water protection IP 67

receiver for Line Lasers
Fr 55

Height indication by LEDs and LCD display.

- Height indication by 3 LEDs which are situated on the front side and top plus a large display on the front
- With clamp
- Shut-off tone
- Automatic shut-off
- Built-in vials

art.-No. 500510

receiver for Line Lasers
Fr 55-M

Receptores para láser de línea

Height indication by LEDs.

- Height indication by 3 LEDs which are situated on the front, side and back
- With clamp
- Shut-off tone
- 2-step accuracy
- Automatic shut-off
- Supplied in case
- Built-in magnet on top

art.-No. 500520

Receptores de maquinaria

Laser receiver

FMr 600

Heavy duty laser receiver ideal for mounting onto construction machines. Strong built-in magnets for connection to machines and a clamp for levelling staffs. Large receiving window (125 mm) and clear height indication (audible and visible). Ideal for use with smaller excavators.

tEcHNicaL data

Accuracy fine	± 5 mm
Accuracy coarse	± 12,5 mm
Working range	200 m
Receiving window	125 mm long
Reception angle	240°
Power supply	4 x AA Alkaline
Operating time	50 h
Temperature range	-20 °C – +50 °C
Dimensions	170 x 100 x 42 mm
Dust/water protection	IP 66
Weight	0,96 kg

suppLiEd WitH

Batteries and container

art.-No. 265000

FEaturEs

- Attachment to levelling staff by use of clamp or directly to the machine with built-in magnets
- LCD, LEDs and 3 different tones indicate heights
- Memory function of last received data
- Water resistant

Machine control receiver Set

FMr 700-M und 700-c

A machine control receiver to improve the operating accuracy of your construction machinery. Used for permanent level control the FMR 700 receiver has a 360° reception range.

tEcHNicaL data

Accuracy fine	± 2 mm – ± 10 mm
Accuracy coarse	± 5 mm – ± 23 mm
Rechargeable batteries	7.2 V NiMH 2500 mAh
Operating time	40 h
Charging time	15 h
Temperature range	-20 °C – +50 °C
Dimensions	376 x 180 x 49 mm
Weight	3,1 kg

art.-No. set FMr 700-M (magnet) 261000
art.-No. FMr 706-M (magnet) w/o remote display 262000
art.-No. set FMr 700-c (clamp) 261100
art.-No. FMr 706-c (clamp) w/o remote display 262100

suppLiEd WitH

Machine control receiver, built-in rechargeable battery, charger, 12/24V- battery cable, remote display with connection cable, hard case

Also supplied separately:
- Machine control receiver FMR 706-M or 706-C, built-in battery, charger, 12/24V battery cable, hard case
- Remote display with connection cable

FEaturEs

- Length of receiving windows 25 cm
- Connect to the machine:
  FMR 700-C
  – with screw clamps
  FMR 700-M
  – with strong magnets
- Detects beam from rotating laser levels of any brand
- Water and dust protected metal housing to IP 66
- Remote display

TEODOLITOS MECANICOS

FET 500

FEaturEs

- Built-in optical plummet
- Telescope bubble
- Circle orientation device
- Available in 400 gon or 360°

tradEs aNd tasKs

- Ideal for all alignments of construction elements and setting out angles
- Prefabricated construction: walls, measurement, control
- Warehouse construction: piling, beams, facades
- Building: bricklaying, masonry, walls, prefabricated and Ferro concrete construction, steel and concrete piling
- Civil engineering: setting out footings, control of profiles
- Road building: incline

Construction theodolite – the versatile starter model for many applications.

tEcHNicaL data

Magnification	20 x
Objective aperture	30 mm
Shortest focussing distance	1,2 m
Direct reading	0.1 gon / 5‘
Estimation	10 mgon / 30“
Weight	2,0 kg
Temperature range	-40°C – +50°C

OptiONaL

Eyepiece prisms for steep angle sighting and tubular compass on request

art.-No. 400 gon	350000
art.-No. 360°	350360

FEt 200

FEaturEs

- Clear and easy scale reading
- Circle orientation device
- Built-in optical plummet
- Available in 400 gon or 360°

tradEs aNd tasKs

- Ideal for all alignments of construction elements and setting out angles
- Prefabricated construction: walls, measurement, control
- Warehouse construction: piling, beams, facades
- Building: bricklaying, masonry, walls, prefabricated and Ferro concrete construction, steel and concrete piling
- Civil engineering: setting out footings, control of profiles
- Road building: incline

Engineers‘/Construction theodolite – high accuracy and clear scale reading. Robust and easy to use.

tEcHNicaL data

Magnification	30 x
Objective aperture	42 mm
Shortest focussing distance	2 m
Direct reading	10 mgon / 1‘
Estimation	2 mgon / 10“
Weight	3,8 kg
Temperature range	-20°C – +45°C

art.-No. 400 gon	320000
art.-No. 360°	320100

TEODOLITOS ELECTRONICOS

FEt 405k, FEt 420k und FEt 110

A range of versatile easy to use electronic theodolites to suit all applications from construction to surveying. Large illuminated LCD displays for optimum readability – flexible, reliable, affordable. The FET 405K and FET 420K are equipped with a two-axes compensator.

FET 405K accuracy 5“ – FET 110 accuracy 10“ – FET 420K accuracy 20“

FET 405K and FET 420K

FET 110

tradEs aNd tasKs

- Ideal for setting out alignment
- Prefabricated construction: walls, measurement, control
- Warehouse construction: piling, beams, facades
- Building: masonry, walls, prefabricated and Ferro concrete construction, steel and concrete piling
- Civil engineering: setting out footings, control of profiles
- Road building: grade/slope

FEaturEs

- 2 large easy-to-read LCDs
- Simultaneous reading of horizontal and vertical circle
- Illumination of display and field of view
- Clockwise / anti-clockwise horizontal angle reading
- „0“ set or hold of horizontal circle at any desired position
- „V“ circle reading in gon/degrees or % of slope

tEcHNicaL data	FEt 420K	FEt 405K	FEt 110
telescope:			
Magnification	30 x	30 x	30 x
Clear objective aperture	45 mm	45 mm	45 mm
Shortest focussing distance	1,4 m	1,4 m	1,3 m
angle measurement:	incremental	incremental	incremental
Accuracy	4 mgon (20“)	1 mgon (5“)	2 mgon (10“)
Minimum reading	2 mgon (10“)	0,5 mgon (2“)	1 mgon (5“)
Compensator	Dual Axis	Dual Axis	
Measuring units	400 gon / 360° / mil	400 gon / 360° / mil	400 gon / 360° / mil
Display	2 x LCD	2 x LCD	2 x LCD
Optical plummet:			
Magnification	3 x	3 x	3 x
Focussing range	0.5 to ∞	0.5 to ∞	0.5 to ∞
Vials:			
Plate level	30“/2 mm	30“/2 mm	30“/2 mm
Circular level	8‘/2 mm	8‘/2 mm	8‘/2 mm
Power supply	NiMH rechargeable battery, charger	NiMH rechargeable battery, charger	NiMH rechargeable battery, charger
Operating time	15 h	15 h	15 h
Temperature range	-20°C – +45°C	-20°C – +45°C	-20°C – +50°C
Tribrach	detachable	detachable	detachable
Weight	4 kg	4 kg	4,8 kg
art.-No.	**314000**	**315000**	**311000**
Opt. accEssOry: 90° EyEpiEcE	**314500**	**314500**	**311500**

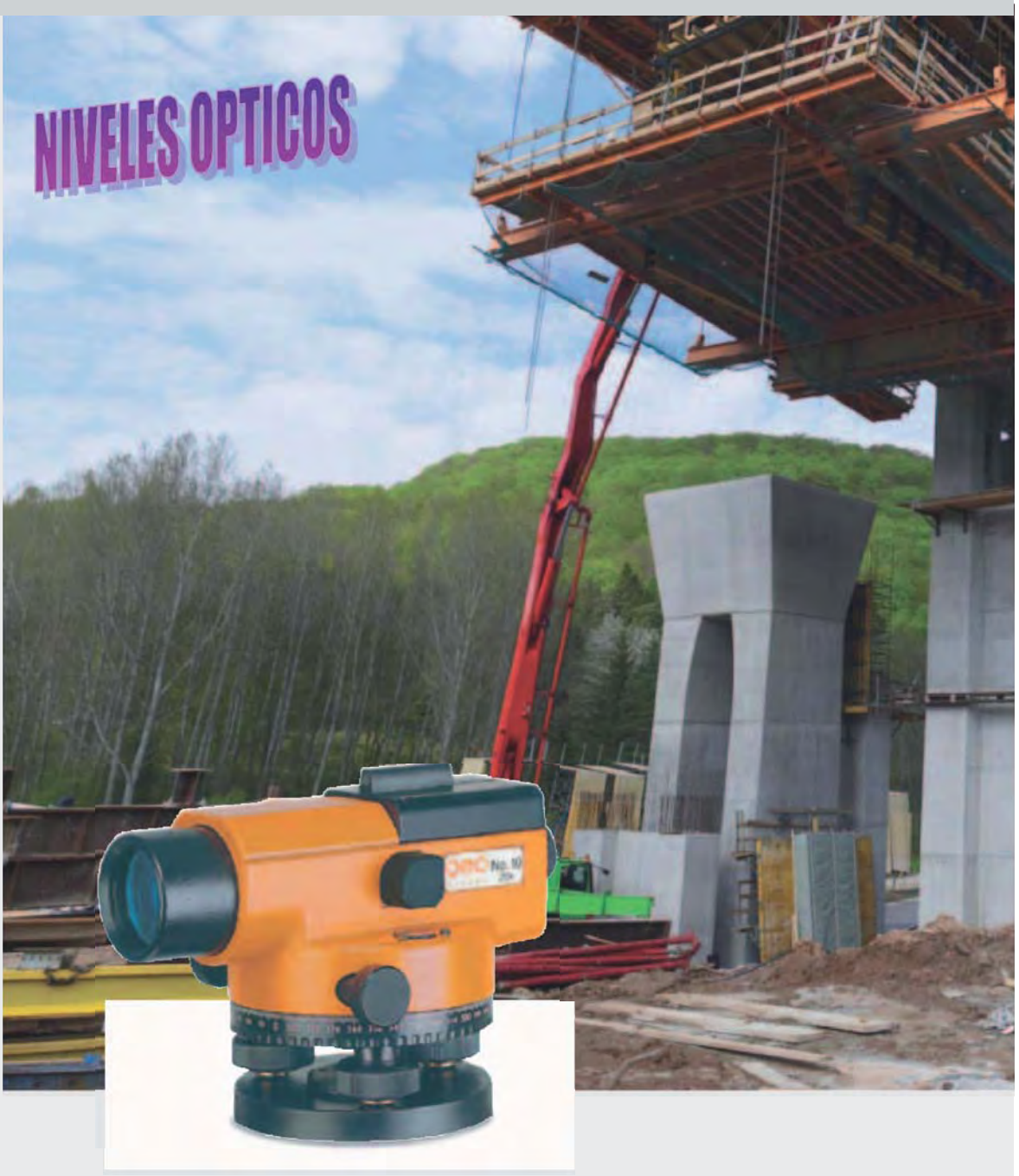
geo FENNEL

tradEs aNd tasKs

For all levelling tasks:
- Building and civil engineering
- Landscape gardening and architecture
- Interior works
- Project planning

FEaturEs

- Nitrogen filled to prevent telescope condensation
- Bubble reading prism for convenient observation of bubble at eye level
- Optical sight for fast alignment to target
- Robust metal housing for protection against damage
- Suitable for both flat and domed head tripods



automatic Level
No.10

Robust and reliable. The No. 10 level series, a market leading product range for more than 15 years. Continuous development ensures the No. 10 is up-to-date and suitable for all levelling applications. Suitable for builders, engineers and surveyors.

tEcHNicaL data	No. 10-20	No. 10-22	No. 10-26	No. 10-32
Mean error for 1 km double levelling	2,5 mm	2,5 mm	2,0 mm	1,5 mm
Telescope magnification	20 x	22 x	26 x	32 x
Objective diameter	35 mm	35 mm	40 mm	40 mm
Shortest focussing distance	0,5 m	0,5 m	0,5 m	0,5 m
Working range of compensator	± 15‘	± 15‘	± 15‘	± 15‘
Levelling accuracy	± 0,5“	± 0,5“	± 0,5“	± 0,5“
Circular bubble	8‘/2 mm	8‘/2 mm	8‘/2 mm	8‘/2 mm
Horizontal circle	400 gon/360°	400 gon/360°	400 gon/360°	400 gon/360°
Dust/water protection	IP 54	IP 54	IP 54	IP 54
Weight	1,8 kg	1,8 kg	1,8 kg	1,8 kg
art.-No. 400 gon **art.-No. 360°**	**210007** **210008**	**210001** **210002**	**210003** **210004**	**210005** **210006**

tradEs aNd tasKs

For all levelling tasks:
- Building and civil engineering
- Landscape gardening and architecture
- Interior works
- Project planning

FEaturEs

- Metal housing
- Mirror for easy reading of bubble
- Suitable for both flat and domed head tripods

automatic Level
FaL

Rugged design for site use. Precision optics in a metal housing and a large range to suit all applications.

Also available as set with tripod and levelling staff.

tEcHNicaL data	FaL 20	FaL 24	FaL 28	FaL 32
Mean error for 1 km double levelling	2,5 mm	2,0 mm	1,5 mm	1,0 mm
Telescope magnification	20 x	24 x	28 x	32 x
Objective diameter	38 mm	38 mm	38 mm	38 mm
Shortest focussing distance	0,3 m	0,3 m	0,3 m	0,3 m
Working range of compensator	± 15‘	± 15‘	± 15‘	± 15‘
Levelling accuracy	± 0,5“	± 0,5“	± 0,5“	± 0,5“
Circular bubble	8‘/2 mm	8‘/2 mm	8‘/2 mm	8‘/2 mm
Horizontal circle	400 gon/360°	400 gon/360°	400 gon/360°	400 gon/360°
Dust/water protection	IP 54	IP 54	IP 54	IP 54
Weight	1,5 kg	1,5 kg	1,5 kg	1,5 kg
art.-No. 400 gon **art.-No. 360°**	**230400** **230360**	**234400** **234360**	**238400** **238360**	**232400** **232360**

geo FENNEL

Sanitary, heating and ventilation, car industry, workshops, renovation

FvE 100

Cámaras de videos

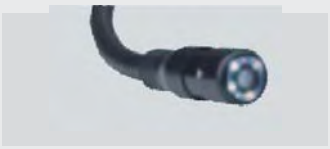
Video borescope for inspection and survey of inaccessible spaces.

FEaturEs

- Water proof camera head and probe
- 1m long flexible gooseneck probe with camera head for the optical inspection of inaccessible spaces
- Camera head with LED lighting
- Immediate transfer of the colour image to the large LCD display
- 180° image rotation at the press of a button
- Direct transfer of image to television or notebook
- Accessories:
  - Hook and magnet attachments for object retrieval
  - Angle mirror attachment to „view around corners“
  - Powerful Li-Ion battery

tEcHNi

camera	
Viewab	
Focal length	6 - 7 cm
Viewable distance	5 - 15 cm
Diameter of camera head	17 mm
Light source	LED
display	
Display size	3“
Resolution	960 x 240 pixel
Image transmission to LCD	Flexible gooseneck
CMOS Image sensor	300.000 pixel
Video output (to TV)	PAL / NTSC
Various	
Probe length	100 cm
Bend radius of probe	6 cm
Dust/water protection probe and camera	IP 67
Power supply	3,7V / 2000 mAH Li-Ion
Operating time	4 h
Temperature range	-10 °C – + 50 °C
Humidity range	15 – 85 % RH
Dimensions	240 x 160 x 100 mm
Weight with probe	0,584 kg



OptiONaL FOr FVE 100 aNd FVE 150 — art.-No.

Optional accessories: Gooseneck probes of 1 m and 2 m length with standard camera head of 17 mm and with 9 mm only.

reference	gooseneck length	camera head diameter	
P 1-17	1 m	17 mm	800750
P 2-17	2 m	17 mm	800751
P 1-9	1 m	9 mm	800752
P 2-9	2 m	9 mm	800753

suppLiEd WitH

Video borescope, 1 m flexible gooseneck probe, TV cable, USB cable, charger, magnet, hook and mirror attachment, container

art.-No. 800700

FvE 150

Video borescope for inspection and survey of inaccessible spaces. Photos and videos can be memorized for documentation purposes.

tradEs aNd tasKs

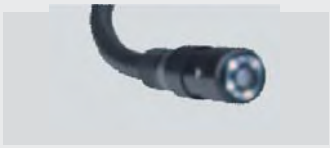
· Sanitary, heating and ventilation, car industry, workshops, renovation

FEaturEs

· Water proof camera head and probe
· 1m long flexible gooseneck probe with camera head for the optical inspection of inaccessible spaces
· Camera head with LED lighting
· Immediate transfer of the colour image to the large LCD display
· 180° image rotation at the press of a button
· Internal memory or SD-card to store images and video sequences
· 2 GB SD-card included (supports up to 8 GB)
· Date and time indication on the display
· Transmission of video clips/ images onto television or PC for editing or documentation
· Multi-language menu (DE, EN, FR, ES)
· Accessories:
  - Hook and magnet attachments for object retrieval
  - Angle mirror attachment to „view around corners“
  - Powerful Li-Ion battery

tEcHNicaL data

camera head	
Viewable angle	0° and 180°
Focal length	6 - 7 cm
Viewable distance	5 - 15 cm
Diameter of camera head	17 mm
Light source	LED
display	
Display size	3,2“
Resolution	320 x 240 pixel
Image transmission to LCD	Flexible gooseneck
CMOS Image sensor	300.000 pixel
Video output (to TV)	PAL / NTSC
Picture/video formats	JPG / 3 GP
Resolution picture/video	320 x 240 Pixel
Various	
Internal memory	70 MB
Additional memory	2 GB SD-card supports up to 8 GB (optional)
Operation languages	EN, FR, DE, ES
Probe length	100 cm
Bend radius of probe	6 cm
Dust/water protection probe and camera	IP 67
Power supply	3,7V / 2000 mAH Li-Ion
Operating time	4 h
Temperature range	-10 °C – + 50 °C
Humidity range	15 - 85 % RH
Dimensions	240 x 160 x 100 mm
Weight with probe	0,584 kg



suppLiEd WitH

Video borescope, 1 m flexible gooseneck probe, TV cable, USB cable, charger, magnet, hook and mirror attachment, 2 GB SD-card, container

art.-No. 800710

geo FENNEL

- Heating, ventilation and refrigeration systems
- Food industry
- Car industry
- Construction
- Building construction
- Fire inspection
- Injection molding industry
- Ship maintenance
- Isolation (heat loss)
- Drying facility

FEaturEs

For non-contact measurement with laser dot. Quick measurements for:

- surfaces which are difficult to reach
- moving or rotating objects
- electrified parts
- chemicals
- hot objects

Termómetros de infrarrojos

infrared thermometer

Firt 550-Pocket and Firt 800-Pocket

Small and handy infrared thermometer, easy to operate, for versatile applications. Particular feature: Measurement with dual laser to focus the target.

suppLiEd WitH

Case, battery

tEcHNicaL data	Firt 550-pOcKEt	Firt 800-pOcKEt
D(istance):S(pot)	12:1	10:1
Temperature range	-50 °C – +550 °C	-35 °C – +800 °C
Ø measuring spot at 100 cm	80 mm	100 mm
Emissivity	adjustable 0,1 – 1,0	adjustable 0,1 – 1,0
Laser pointer	yes, dual	yes, dual
Auto data hold	yes	yes
Illuminated display	yes	yes
Max, Min	yes	yes
High and low alarm	yes	yes
Power supply	9 V battery	9 V battery
Response time	< 1 sec	< 1 sec
Resolution display	0,1°C	0,1°C
Accuracy	± 1 %	± 1 %
Laser class	2	2
Weight	0,178 kg	0,178 kg
Dimensions	146 x 104 x 43 mm	160 x 82 x 42 mm
art.-No.	800001	800002

infrared thermometer

Firt 1000

Large temperature range and especially small measuring target for exact measurements.

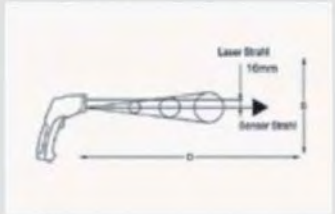
tradEs aNd tasKs

- Heating, ventilation and refrigeration systems
- Electrical industry
- Food industry
- Car industry
- Construction
- Building construction
- Fire inspection
- Injection molding industry
- Ship maintenance
- Isolation (heat loss)
- Drying facility

FEaturEs

For non-contact temperature measurements with laser dot
Quick measurements for:

- surfaces which are difficult to reach
- moving or rotating objects
- electrified parts
- chemicals
- hot objects



tEcHNicaL data	Firt 1000
D(istance):S(pot)	50:1
Temperature range	-50 °C – +1000 °C
Ø measuring spot at 100 cm	20 mm
Emissivity	adjustable 0,1 – 1,0
Laser pointer	yes
Auto data hold	yes
Illuminated display	yes
Max, Min, DIF, AVG, Record	yes
High and low alarm	yes
Power supply	9 V battery
Response time	< 1 sec
Resolution	0,1 °C to 200 °C, 1 °C over 200 °C
Accuracy	± 1,5 %
Laser class	2
Weight	0,3 kg
Dimensions	225 x 115 x 55 mm
art.-No.	800010

suppLiEd WitH

Case, battery

geo FENNEL

Termómetros profesionales con sonda

Professional k-type thermometers with single and dual input

Ft 1300-1 and Ft 1300-2

- Temperature measurements of liquid construction materials like asphalt, isolation checks
- Measurements in the HVAC branch, energy supply
- Industrial and laboratory application

FEaturEs

- Indication of MAXimum value
- Data hold function
- Large display (45 mm) with illumination

suppLiEd WitH

Flexible wire probe TP-300, set of batteries, case, user manual

tEcHNicaL data	Ft 1300-1	Ft 1300-2
Scanfunction	1 measurement	2 measurements or temperature difference
Sampling rate	2,5x per second	2,5x per second
Accuracy	± 0,5% / ± 1°C	± 0,5% / ± 1°C
Display resolution	0,1° / 1°	0,1° / 1°
Temperature range	-50 °C – +1300 °C	-50 °C – +1300 °C
Measuring units	°C / °F / K	°C / °F / K
Dimensions	162 x 76 x 39 mm	162 x 76 x 39 mm
Weight	0,21 kg	0,21 kg
Power supply	Batteries	Batteries
art.-No.	800400	800410

digital thermometer

Ft 1000-Pocket

Handy thermometer with immersion temperature probe.
Pocket-size, light weight and easy to operate.

tradEs aNd tasKs

Temperature measurement of liquids and soft materials.

FEaturEs

- Handy thermometer with immersion probe
- Pocket-size, light weight, easy to operate

suppLiEd WitH

Set of batteries, incorporated all-purpose probe

tEcHNicaL data	
Temperature range	-20 °C – +1000 °C
Accuracy	± 3 %
HOLD function	yes
Automatic shut-off	yes
Battery status indicator	yes
Dimensions	117 x 65x 24 mm
Weight	0,16 kg
Power supply	Batteries

art.-No. 800420

Medidores de humedad y temperatura

Humidity and temperature Meter

FHt 60 FHt 100

tradEs aNd tasKs

· Environmental monitoring
· Warehouses, production facilities
· Greenhouses (floristics)

FEaturEs

Quick measurement of relative humidity and temperature.

FHt 100
Dewpoint temperature measurement for recognition of mold building up and wet bulb temperature measurement (evaporation temperature).

tEcHNicaL data	FHt 60	FHt 100
Temperature range	-20°C – +60°C	-30°C – +100°C
Humidity range	0 – 100 % RH	0 – 100 % RH
Fast response time	yes	yes
Illuminated display	yes	yes
Max hold	yes	yes
Data hold	yes	yes
Dewpoint temperature	no	-30°C – +100°C
Wet bulb temperature	no	0°C – +80°C
Accuracies:		
Humidity	± 3,5 % RH	± 2 % RH
Temperature	± 2°C	± 0,5°C
Dewpoint	–	± 0,5°C
Wet bulb	–	± 0,5°C
art.-No.	800100	800110

suppLiEd WitH

Case, battery

geo FENNEL

- Building and construction: Plaster, gypsum, concrete and mortar
- Wood construction: Sawn timber
- General: Firewood, wood, cardboard, paper

Moisture Meter

FEaturEs

- Measurement principle: electrical resistance
- Dual display for wood and construction materials
- Replaceable 8mm measuring pins
- Protective cap with integrated function check and battery check
- Automatic power-off
- Impact resistant housing

suppLiEd WitH

9 V alkaline battery

art.-No. 800450

FHM 10

Medidores de humedad

Pocket-size moisture meter for fast and convenient measurement of moisture content.

tEcHNicaL data

Measuring range wood	6 – 44 %
Accuracy wood	± 1 %*
Measuring range other materials	0,2 – 2 %
Accuracy wood	± 0,05 %
Power supply	3 x CR2032 batteries
Dimensions	130 x 40 x 25 mm
Weight	102 g

*Average adjustment for European wood based on wood temperature of 20°C

tradEs aNd tasKs

- Civil engineering (plaster)
- Wood processing
- Diagnose moisture related problems

FEaturEs

- Digital reading of humidity in %
- Additional indication of humidity in 3 steps through LEDs:
  LO (low)
  MI (medium)
  HI (high)
- Battery indicator
- Automatic power shut off

suppLiEd WitH

Carrying case, 2 replacement electrode pins, battery

art.-No. 800300

Moisture Meter 590

CE mark approved
Conforms to the EU standards EN50081-1 (97) and EN50082-1 (97)

The moisture meter 590 determines the humidity content of a material according to the resistance procedure: the two measuring pins are pressed into the material and electrical current is conducted through it. With increasing water content, resistance reduces and the conductivity of the material increases. If the material has a high resistance, the humidity content is low, if the material has a low resistance, the humidity content is high.

The moisture meter measures the humidity permeation of the material or surface humidity and also determines the dry and humid areas.

This measuring device is used for determining moisture levels in timber and soft building materials such as gypsum or plaster.

tEcHNicaL data

Range	8 % – 28 %; beyond 28 % values are indicated in direction
Accuracy	± 2 % between 8% and 28 %
Temperature range	0°C – +40°C
Sizes	193 mm x 44 mm x 40 mm
Weight	150 g with batteries (1,5 V / 4 x AAA)

Moisture detector
FFM 100

Detector de humedad

Quick non-destructive measurement of surface humidity up to 40 mm measuring depth.

tEcHNicaL data

Measuring depth	20 – 40 mm
Measuring range	0 – 100
Resolution	1
HOLD function	yes
Display illumination	yes
Automatic shut-off	yes
Battery status indication	yes
Dimensions	80 x 45 x 45 mm
Weight	0,18 kg
Power supply	Batteries

tradEs aNd tasKs

· Building materials
· Concrete floors, walls, ceilings

FEaturEs

Quick measurement of humidity in building materials without destruction of the surface.
· Indication of minimum/ maximum values
· Sensor type metal spheroid

suppLiEd WitH

Set of batteries, case

art.-No. 800650

thermometer - anemometer
Fta 1

A professional remote vane thermo-anemometer for measuring air velocity, air flow and temperature.

Termómetro - Anemómetro

tEcHNicaL data

air velocity	Measuring range	resolution	accuracy
m/s	0,40 – 30,00	0,01	± 3 % ± 0,20 m/s
ft/min	80 – 5900	1	± 3 % ± 40 ft/min
km/h	1,4 – 108,0	0,1	± 3 % ± 0,8 km/h
mph	0,9 – 67,0	0,1	± 3 % ± 0,4 mph
knots	0,8 – 58,0	0,1	± 3 % ± 0,4 knots

air flow	Measuring range	resolution	accuracy
CMM (m^3/min)	0 – 999900	0,001	0 – 999,9 m^2
CFM (ft^3/min)	0 – 999900	0,001	0 – 999,9 ft^2

air temperature	Measuring range	resolution	accuracy
°C	-10° – +60 °C	0,1 °C	± 2 °C
°F	14° – 140 °F	0,1 °F	± 4 °F

Various	
Power supply	1 x 9 V alkaline battery
Operating time	80 h
Dimensions	75 x 203 x 50 mm
Weight	280 g

tradEs aNd tasKs

· Ventilation and air conditioning: Installation of ventilation systems, measurements of air flow and temperature
· Agriculture: Crop spraying, ventilation surveys and crop storage
· Environmental monitoring

FEaturEs

· Simultaneous display of air flow and air velocity
· Measurement of ambient temperature
· Large easy-to-read LCD display with switchable backlight
· Maximum/minimum function
· 20 average readings for air flow and air velocity
· Data HOLD function
· 16 memory locations for area (8 CMM, 8 CFM)
· Remote vane with low-friction bearing (65 mm dia.) for accurate results

suppLiEd WitH

Sensor with 120 cm cable, 9 V alkaline battery, container

art.-No. 800700

geo FENNEL

· Industry, health & safety, school, public works
· Environmental measurements

FEaturEs

· For quick check of sound level
· Standard IEC 651 type 2

Sound Level Meter
FSM 130 and FSM 130+

Sonómetros

tEcHNicaL data	FsM 130	FsM 130+
Low range (Lo)	35 – 100 dB	35 – 100 dB
High range (Hi)	65 – 130 dB	65 – 130 dB
Frequency weighting A, C		Lo 35-100 dB Hi 65-130 dB
Max hold	yes	yes
Data hold	yes	yes
Analog AC/DC output or connection to analyzer or recorder	yes	yes
IEC 651 Type 2 standard	yes	yes
Built-in calibration check	no	yes
Accuracy at 94 dB	1,5 dB	1,5 dB
Operation temperature	0°C – +40°C	0°C – +40°C
Operation humidity	< 80 % RH	< 80 % RH
art.-No.	800200	800210

suppLiEd WitH

Case, battery

tradEs aNd tasKs

· Universal measuring device for DC and AC voltage
· DC current resistance
· Transistor hFE diode and continuity test
· Light (luminosity)
· Sound
· Humidity
· Temperature overload protection

5-in1 digital Multimeter
FMM 5

suppLiEd WitH

All-purpose probe TP-500, set of batteries, case, testing cable

art.-No. 800600

tEcHNicaL data

Multimeter	Max. range	resolution	accuracy
Voltage DC	600 V	0,1 mV	± 0,5 % ± 2*
Voltage AC	600 V	100 mV	± 1,2 % ± 10*
Current DC	10 A	0,1 µA	± 1,0 % ± 2*
Resistance	20 MΩ	0,1 Ω	± 0,8 % ± 2*
Environment	**Max. range**	**resolution**	**accuracy**
Light (luminosity)	20.000 Lux	0,1 Lux	± 0,5 % ± 10*
Sound	100 dB	0,1 dB	± 3,5 dB
Humidity	95 % RH	0,1 % RH	± 5,0 % RH
Temperature	-20 °C – +200 °C	0,1 °C	± 3,0 % ± 1*
	-20 °C – +1300 °C	0,1 °C	± 3,0 % ± 5*

* digital

tP-300

Flexible wire probe.

- K-type element
- Ø 2,5 mm
- Length 100 cm
- Measurement temperature range -50°C – +300°C
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800900

tP-500

All-purpose probe.

- K-type element
- Ø 3 mm
- Length of probe 12 cm
- Length of wire 76 cm
- Temperature measurement of air or liquids (i.e. oils, water, sand, building materials)
- Measurement temperature range -50°C – +900°C
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800901

Nr-88B

Flexible steel probe.

- K-type element
- Ø 2 mm
- Length 100 cm
- Measurement temperature range -50°C – +450°C
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800902

Nr-31B

Surface temperature probe.

- K-type element
- Length of probe 12 cm
- Length of wire 150 cm
- Measurement temperature range -50°C – +450°C
- Temperature measurement of surfaces on hard materials
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800903

Nr-33

Right angle surface temperature probe.

- K-type element
- Temperature measurement of surfaces which are difficult to reach or which are hot with no need to keep the hand over heated area
- Length of probe 34 cm
- Length of wire 150 cm
- Measurement temperature range -50°C – +450°C
- Temperature measurement of surfaces on hard materials
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800904

Nr-38

Air temperature probe.

- Quick measurement of air and gas temperature
- Length of probe 21 cm
- Length of wire 150 cm
- Measurement temperature range -50°C – +800°C
- Application with FT 1300-1, FT 1300-2, FMM5

art.-No. 800905

Medidores láser de distancia

Ecodist Plus

The perfect starter model with professional features. Compact and ergonomically designed. Shortcut keys for area and volume calculation, permanent function for stake-out and indirect height measurement (Pythagoras function). The EcoDist Plus offers complex technology at an affordable price with long-term reliability. The ideal laser distance meter for professionals or inexperienced users. A tool box is not complete without the EcoDist!

FEaturEs

- Plus/minus
- Area/volume
- Permanent measurement
- Indirect height measurement (Pythagoras)
- Reference front/back
- mm, ft, inch

tEcHNicaL data

Distance	0,10 – 30 m
Accuracy	± 2 mm
Dust/water protection	IP 40
Weight	96 g

suppLiEd WitH

Holster, batteries

art.-No. d1750

diSto d2

The compact and handy base model was specifically designed for indoor applications. Shortcut keys for addition, subtraction, aera and volume calculation make measuring fast and very reliable. The last 10 measurements are also stored. As with all Leica laser distance meters, the laser dot is clearly visible. You can always see the targeting point, even if the target object is in a hard to access aera. Leica DISTO™ D2 – you will never use a measuring tape again!

FEaturEs

- Plus/minus
- Area/volume
- Permanent measurement
- Indirect height measurement (Pythagoras)
- Reference front/back
- mm, ft, inch
- Flip-out end-piece
- Minimum/maximum
- Stores last measurements

tEcHNicaL data

Distance	0,05 – 60 m
Accuracy	± 1,5 mm
Dust/water protection	IP 54
Weight	90 g

suppLiEd WitH

Holster, batteries

art.-No. 300001

diSto dXt

The robust and stable laser distance meter for everyday use at rough construction sites. The Leica DISTO™ DXT is dust tight and jet water protected as per IP 65. A massive rubber coating protects the sensitve optic. The Leica DISTO™ DXT even passes drop tests from 2 m height without being damaged. The extra sealed keypad can be easily cleaned under flowing water. The Leica DISTO™ DXT calculates areas, volumes or room values without any problem. Thanks to the integrated Pythagoras function heights and widths can be measured indirectly when direct measuring is not possible. The instrument also offers minimum / maximum function, automatic detection of the multifunctional endpiece and storage for up to 10 values.

FEaturEs

- Plus / Minus
- Area / Volume
- Minimum / Maximum
- Permanent measurement
- mm, ft, inch
- Reference front / back
- Flip-out endpiece
- Room function summary
- Height measurement (Pythagoras)
- Dust/water protection IP 65

tEcHNicaL data

Distance	0,05 – 70 m
Accuracy	± 1,5 mm
Dust/water protection	IP 65
Weight	130 g

suppLiEd WitH

Holster, hand loop, batteries

art.-No. 300020

diSto d3a and d3a Bt

With the Leica DISTO™ D3a you can measure distances easily and precisely even if there is an obstruction. Thanks to the combination of distance and tilt measurements horizontal distances can be determined easily and precisely. If you accomplish a measurement with a tilt of ± 45° the Leica DISTO™ D3a will automatically calculate the shortest. At the touch of a button, distance and tilt are measured simultaneously. Additional results such as height etc. are displayed. Furthermore, the Leica DISTO™ D3a calculates areas of rectangles or triangles or volumes, makes room calculations and has different kinds of Pythagoras functions integrated.

The DISTO™ D3a BT has integrated BLUETOOTH ® technology and transfers all measured values wireless, quick and error-free to PC. Your data can be easily further processed in Excel ®, Word ®, AutoCad ® or other applications. The file transfer software „Leica DISTO™ transfer“ is included in the scope of delivery.

FEaturEs

- Plus / Minus
- Area / Volume
- Minimum / Maximum
- Permanent measurement
- mm, ft, inch
- Reference front / back
- Flip-out endpiece
- Room function summary
- Height measurement (Pythagoras)
- Measurement despite obstructions
- Angle measurement up to 45°
- BLUETOOTH (D3a BT only)

tEcHNicaL data

Distance	0,05 – 100 m
Accuracy	± 1,0 mm
Dust/water protection	IP 54
Weight	150 g

suppLiEd WitH

Holster, hand loop, batteries

art.-No. d3a	300015
art.-No. d3a Bt	300016

diSto d5

The Leica DISTO™ D5 convinces with lucid colour display and shows crystal-clear image when targeting with the digital pointfinder. The 4 x zoom makes finding the target at long distances much easier and allows measurements to be taken even in glaring sunshine. With the built-in tilt sensor you can also take indirect measurements and measure past obstructions (horizontal distance).

FEaturEs

- Maximum / minimum
- Permanent measurement
- Plus / minus
- Area / volume
- Room function summary
- Indirect height measurement (Pythagoras)
- Measurements despite obstructions
- Measurement of facade areas
- Measurements of vertical angles up to ± 45°

tEcHNicaL data

Distance	0,05 – 200 m
Accuracy	± 1,0 mm
Dust/water protection	IP 54
Weight	195 g

suppLiEd WitH

Holster, hand loop, batteries

art.-No.	300006

diSto d8

The Leica DISTO™ D8 is equipped with Bluethooth® technology incl. software for wireless and easy transfer to PCs: With the high resolution colour display and the digital pointfinder with 4 x zoom you can measure long range distances quickly and easily because you always see your targeted point. The combination of angle and distance measurements allows you to determine distances where conventional methods fail. The horizontal distance, for example, can also be determined quickly and efficiently past obstacles or the elevation of a tree, even though there is no reflective point.

FEaturEs

- Maximum / minimum
- Permanent measurement
- Plus / minus
- Area / volume
- Room function summary
- Indirect height measurement (Pythagoras)
- Measurements despite obstructions
- Measurement of facade areas
- Indirect slope measurements
- Bluetooth™
- 360° tilt sensor for measurement of any slope (even overhead)

tEcHNicaL data

Distance	0,05 – 200 m
Accuracy	± 1,0 mm
Dust/water protection	IP 54
Weight	205 g

suppLiEd WitH

Holster, hand loop, batteries

art.-No.	300008

Inclinómetros digitales

FEaturEs

- Small and handy
- Inclination in degrees (°) or percent (%)
- Working range of angle measurement 4 x 90°
- 0° and 90°-position of inclination is confirmed by a signal tone
- Automatic digit inversion for overhead measurements
- Hold-function to freeze measurement
- Magnetic base
- 1/4" thread for camera tripod
- Zero position re-set (between 0° and 33°)

S-digit mini

Electronic inclinometer. Handy-size and accurate. This ensures easy measurement even in the most difficult situations.

tEcHNicaL data

Working range	4 x 90°
Resolution	0,1° or 0,1%
Accuracy	0° + 90° = ± 0,1°
	1° - 89° = ± 0,2°
Power supply	3 x 1,5 V AAA Alkaline
Operating time	600 h
Size	156 x 56 x 31 mm
Weight	0,3 kg incl. batteries
Temperature range	-10° – +45° C

suppLiEd WitH

Padded bag, batteries

art.-No. 610000

FEaturEs

- Working range 4 x 90°
- Different signal tones when approaching 0° / 90° and continuous tone at 0° and 90°
- Zero position re-set (between 0° and 33°)
- Inclination in degrees (°) and percent (%)
- Magnetic housing
- Visible laser beam to extend working range
- HOLD-function to freeze measurement
- Illuminated display
- ¼" thread for camera tripod

S-digit multi

Electronic inclinometer with a rotatable display for easy reading in many positions.

tEcHNicaL data

Resolution	0,1° or 0,1%
Accuracy	0° and 90° = ± 0,1°
	1° to 89° = ± 0,2°
Power supply	3 x AAA Alkaline
	w/o laser 50 h
	with laser 20 h
	0,5 kg
	27 cm
	-10° – +45° C
	2

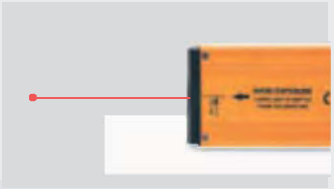
suppLiEd WitH

Padded bag, batteries

art.-No. 630000

S-digit 60

Robust slope measurer. Length 60 cm. Incorporated laser beam.



FEaturEs

- Length 60 cm
- Inclination in degrees (°) or percent (%)
- Working range of measurement 4 x 90°
- 0° and 90°-position of inclination is confirmed by a signal tone
- Automatic digit inversion for overhead measurements
- Visible laser beam to extend working range
- Hold-function to freeze measurement
- Built-in horizontal, vertical and 45°-vials
- 1/4“ thread for camera tripod
- Zero position re-set (between 0° and 33°)

tEcHNicaL data

Working range	4 x 90°
Resolution	0,1° / 0,1 %
Accuracy	0° + 90° = ± 0,1°
	1° - 89° = ± 0,2°
Working range laser	20 m
Accuracy	± 0,5 mm/1 m
Wave length	650 nm
Laser class	2
Power supply	3 x 1,5 V AA Alkaline
Operating time	60 h
Weight	0,85 kg
Dimensions	600 x 27 x 60 mm
Temperature range	-10° – +45° C

suppLiEd WitH

Padded bag, batteries

art.-No. 620000

S-digit 60WL und 120WL

Electronic inclinometers for everyday use.

FEaturEs

- 180° rotatable display
- Inclination direction indication
- Working range 4 x 90°
- Different signal tones when approaching to 0° and 90°
- Continuous tone at 0° and 90°
- 2 built-in 90° vials, 1 horizontal vial
- Recessed handgrip for ergonomic use
- Integrated hooks

tEcHNicaL data	s-digit 60WL	s-digit 120WL
Length	60 cm	120 cm
Measuring units	°, %, mm, m, in, ft	°, %, mm, m, in, ft
HOLD function	ja	ja
Accuracy 0° + 90°	± 0,1°	± 0,1°
Accuracy 1° – 89°	± 0,2°	± 0,2°
Power supply	3 x AAA Alkaline	3 x AAA Alkaline
Operating time	60 h	60 h
Weight	0,68 kg	1,1 kg
Dimensions	600 x 61 x 28 mm	1200 x 61 x 28 mm
Temperature range	-10° – +45° C	-10° – +45° C
art.-No.	**640000**	**640100**

suppLiEd WitH

Set of batteries, case

geo FENNEL

Medidor de ángulos e inclinaciones

Multi-digit Pro

All-in-one. Electronic angle measurer, electronic slope measurer and laser spirit level. Easy and accurate. For measuring angles, inclinations, sloped and plane surfaces.

FEaturEs

- Displays angle and inclination simultaneously
- Angle measurement in degrees
- Inclination in degrees (°) or percent (%)
- Automatic digit inversion for overhead measurements
- Working range of angle measurement 0 to 180°
- Automatic shut-off
- Hold-function to freeze measurement
- 180°-lock to prolong the unit to 1m length
- Arm can be locked in every desired position
- Visible laser beam to extend working range
- 1/4“ thread for camera tripod
- Zero position re-set (between 0° and 33°)

tEcHNicaL data

Working range angle	0° – 180°
Resolution	0,1°
Accuracy angle	± 0,1°
Working range inclination	0° – 90° or 0 % – 100 %
Resolution	0,1° or 0,1%
Accuracy inclination	0,2°
Range of laser	20 m
Accuracy laser	± 0,5 mm / 1 m
Wave length	650 nm
Laser class	2
Temperature range	-10 °C – +45 °C
Power supply/ Operating time	3 x 1.2 V AA batteries / 48 h
Length (unfolded)	530 mm (1.000 mm)
Weight	1,3 kg incl. batteries

suppLiEd WitH

Padded bag, batteries

art.-No. 600000

angle Finder

Medidor de ángulos

- Easy measurement of angles from 0° to 180° in 1° increment.
- Horizontal and vertical vials.
- With clamping screw.
- Built-in ends for use as compass for scribing.
- Length: 40 cm

art.-No. M381005

Medidor de planos
"curvímetro digital"

Scale Master Pro XE

Professional digital plan measurer. 91 architectural, engineering, map and metric blueprint scales. Perform instant linear, rectangular area and volume take-offs. Reads your measurement in feet/inches or metric. Subtract, constant and counter.

suppLiEd WitH

Scale Master Pro XE with case, batteries and manual

art.-No. 6135

OptiONaL

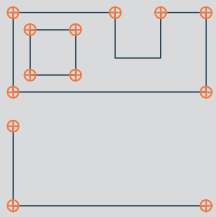
PC-kit for data transfer to PC

art.-No. 5001B

tradEs aNd tasKs

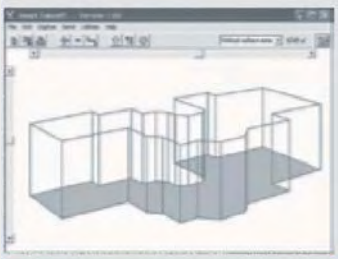
Measures and calculates lengths and rectangular areas

- Pipe construction
- Heating, air conditioning
- Fence construction
- Telecommunication and cable companies
- Electrical fitters
- Architects



ultra Scale Master Pro

Take full advantage of your Ultra Scale Master® Pro digitizing capabilities by using Smart Takeoff!™ – an optional affordable and simple-to-use graphic digitizing program. When combined with the speed and accuracy of the Ultra Scale Master® Pro digitizing tool, this system is invaluable as part of any construction cost estimating system.



Smart Takeoff!™ provides graphic representation of the digitized coordinates for the Ultra Scale Master® Pro, and verifies quantities while minimizing, or even eliminating, errors of omission and miscalculation. Use Smart Takeoff!™ to determine quantities of area, perimeter, length, and vertical surface area for compiling construction cost estimates.

Smart Takeoff!™ transfers digitized quantities to virtually any Windows® based program including spreadsheets (spreadsheet program not included), and also allows you to export the graphic image in DXF format for use in other programs. The Ultra Scale Master® Pro can also operate as a stand alone digital area takeoff tool, or you can connect it to your PC to transfer measurements into any estimating and spreadsheet program that accept text input from a number pad or keyboard.

The ergonomic design with large targeting window alows you to accurately measure and compute areas, segment lengths, perimeters, and volumes for simple or complex polygons, polylines, irregular shapes, arcs and circles. 72 built-in architectural and engineering scales allow you to measure plans and drawing up to 24“ x 35“ in size. Four custom scales allow you to measure out of scale drawings.

Further information is available @ www.geo-fennel.de

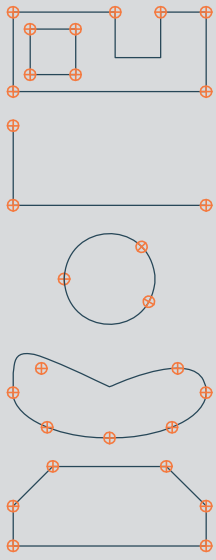
art.-No. (separate)
ultra scale Master pro 6250
smart takeoff!-software 6230

art.-No. (set)
ultra scale Master proset 6271

tradEs aNd tasKs

Measures and calculates length, rectangular areas and all kind of polygons

- Pipe construction
- Plumbers
- Plumbing, heating, air conditioning
- Fence construction
- Telecommunication and cable companies
- Electrical fitters
- Engineering
- Landscape gardening and architectures
- Concrete construction
- Floor laying
- Building contractors
- Roofers
- Tile layers
- Interior decorators
- Architects



geo FENNEL

aLL-PurPoSE triPodS

Tripodes standard

Aluminium and wooden tripods for measuring instruments.
Strong, durable and reliable.

aluminium tripods
FS 20, FS 23

aluminium tripod Fs 20
Similar to FS 23. Lighter construction. Ideal for levelling instruments.

aluminium tripod Fs 23
- Ideal for all measuring instruments
- Quick clamp system
- Flat head
- Shoulder carrying strap
- Diameter of tripod head 158 mm

FS 23 W/S with screw clamp

FS 20-d, FS 23-d

aluminium tripod Fs 20-d
Same as FS 20 tripod, however, with domed head

aluminium tripod Fs 23-d
Same as FS 23 tripod, however, with domed head.

Wooden tripods
FS 24

- Robust wooden tripod for theodolites and total stations
- Quick clamp system
- Flat head
- Shoulder carrying strap
- FS 24 W/S with screw clamp

aluminium tripods
FS 40

- Adjustable range of centre column 30 cm
- Operating range 0,95 – 1,86 m (incl. 30 cm centre column)
- Quick clamp system

articLE	tripOd HEad	siZE/cM	WEigHt	art.-No.
FS 20	Flat head	105 – 165	3,5 kg	151
FS 20-D	Domed head	105 – 165	3,5 kg	157
FS 23	Flat head	105 – 170	5,1 kg	152
FS 23-D	Domed head	105 – 170	5,1 kg	153
FS 23 W/S	Flat head	105 – 170	5,1 kg	152 W/S
FS 24	Flat head	105 – 170	6,5 kg	154
FS 24 W/S	Flat head	105 – 170	6,5 kg	154 W/S
FS 40	Column/Flat head	95 – 186	3,2 kg	150

Elevating tripod
FS 10

- Lightweight elevating tripod made of aluminium for instruments with 5/8" thread
- Working range 67 to 188 cm (incl. 30 cm centre column)
- Rotating head
- Incorporated circular bubble
- Weight 2,3 kg
- Incl. bag

art.-No. 302000

camera tripod
FS 14

- Lightweight elevating tripod made of aluminium for instruments with 1/4" thread
- Working range 57 to 161 cm
- Rotating head
- Ideal as accessory for laser distancemeter
- Incl. bag
- Weight 1,4 kg

art.-No. 301000

ELEvatiNg triPodS

Elevating tripods with adjustable range – ideal for all rotating and line lasers.

Trípodes de columna

Elevating tripod FS 30-M

- Working range 0,80 – 2,00 m
- Adjustable range of centre column 39 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Incorporated circular bubble

Elevating tripod FS 30-XS

- Working range 1,01 – 3,00 m
- Adjustable range of centre column 36 cm
- Fine crank drive for fine adjustment of working range
- Upper column length 43 cm
- Quick clamp system, shoulder carrying strap
- Struts between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Retracted length 1,1 m for convenient transport
- Incorporated circular bubble

Elevating tripod FS 30-L

- Working range 0,95 – 2,85 m
- Adjustable range of centre column 40 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Incorporated circular bubble
- Continuous opening for instruments with plumb down facility

Elevating tripod FS 30-S

- Short tripod ideal for cutting checks
- Working range 0,68 – 1,38 m
- Adjustable range of centre column 35 cm
- Quick clamp system, shoulder carrying strap
- Robust chains between tripod legs
- Integrated retractable rubber pads for non-slip use on hard surfaces
- Continuous opening for instruments with plumb down facility
- Incorporated circular bubble

Elevating tripod FS 30-XL

- Working range 1,66 – 3,80 m
- Adjustable range of centre column 104 cm
- Load up to 20,0 kg
- Combined quick and screw clamp system for extra stability
- Struts between tripod legs
- Retracted length 1,79 m only for comfortable transport
- Made of aluminium (centre column) and fibre glass (tripod)
- Incorporated circular bubble

articLE	tripOd HEad	siZE/cM	WEigHt	art.-No.
FS 30-S	Column/Flat head	68 – 138	4,2 kg	155
FS 30-XS	Column/Flat head	101 – 300	5,7 kg	165
FS 30-M	Column/Flat head	80 – 200	5,2 kg	158
FS 30-L	Column/Flat head	95 – 285	8,2 kg	156
FS 30-XL	Column/Flat head	166 – 380	15,6 kg	159

Integrated circular bubble

geo FENNEL

Miras y accesorios

rod Level
Lr 7

- For TN 14/15 and TN 15-0
- Adjustable

art.-No. 370

telescopic Levelling Staff
tN 20k

- Made of strong aluminium tubes
- Graduation in mm
- Length 2,40 m
- Lower part adjustable in height for zero setting
- Including circular bubble and carrying case
- Including adjustable clamp for receiver
- Weight 0,9 kg
- Ideal for use with rotating laser levels
- Correct sign reading

art.-No. 482

telescopic rule
EasyFix 5 m

- Easy reading of measuring display
- Auto-lock on each section when fully extended
- Incorporates two vials
- Cm/mm-graduation on bottom section
- Retracted length 104 cm, max. length 5 m
- Weight 2 kg

suppLiEd WitH

Threaded pins for top and bottom plate for measuring to corners and edges, carrying case

art.-No. 451

telescopic Levelling Staff
tN 14/15

- Made of strong aluminium tubes
- Silver anodised finish
- Front side cm-E graduation throughout total length
- Available in 4 m and 5 m
- Reverse side graduation in mm for height measurements
- Slit to fix LR 7 rod level
- Fully adjustable
- Secure snap-in at each meter

OptiONaL

Nylon case with shoulder carrying strap, rod level LR 7

art.-No. tN 14, 4 m 484
art.-No. tN 15, 5 m 485

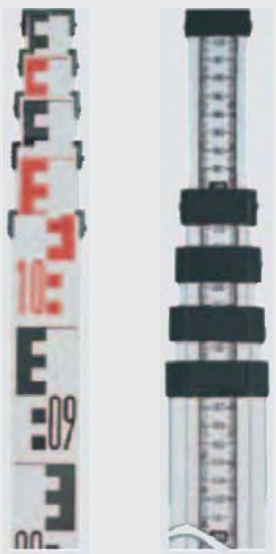
telescopic Levelling Staff
tN 15-0

Same as TN 15, however, reverse side graduation in mm with “0” beginning at the bottom. Available in 5 m only

OptiONaL

Nylon case with shoulder carrying strap, rod level LR 7

art.-No. 486



Precision Measuring Wheel
M 10

- Wheel circumference 1 m
- Clamp for wheel
- Robust support allows M 10 to stand upright
- Dirt remover
- Precision counter with „0“ reset
- Sturdy spokes offer low resistance to wind ensuring ease of use
- The highly visible colour of the wheel aids operator safety during use on roads
- Weight 2,7 kg

art.-No.	110

Marking Spray

- Enviromentally neutral: free of CFC, toluene, heavy metal
- Contents 500 ml
- All angle spraying
- Marking and sticking to any surface even if it is wet
- Fast drying
- Complete emptying of can
- Colour coordinated cap which is connected with the can

cOLOurs	art.-No.
Bright orange	901
Warning red	902
Radiant blue	903
Gleaming yellow	904
Safety green	905
Pink	906
Red	911
Yellow	913
White	915

Precision Measuring Wheel
M 10S

Same as M 10, however:
- Heavy model with double-disk wheel made of metal
- Weight 3,4 kg

art.-No.	141

Electronic Measuring Wheel
ME 100 with kickstand

- Wheel circumference 1m
- Accuracy 0,1%
- Range from 0 to 999.999,99 m
- Memory function

art.-No.	6425

M 10k and M 10t

Sturdy PVC-case and padded nylon bag for M 10, M 10S or M 20

art.-No. case	011
art.-No. bag	010

Radio-teléfonos

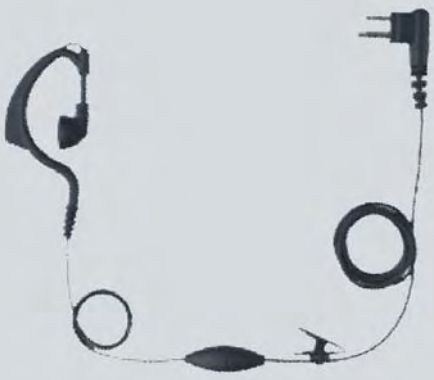
F 6

Two-way radio for professional use.

FEaturEs

- Clear audio quality
- Long range
- Robust housing, IP-X6
- European wide license toll free (PMR 446)
- LED shows receipt, transmission and battery status

F 6-HM hand microphone



F 6-EM earphone / clip microphone

suppLiEd WitH

Two-way radio, rechargeable battery, charger, belt clip, hand loop, user manual

art.-No. 870000

OptiONaL

F 6-HM hand microphone with jacket clip

art.-No. 870100

OptiONaL

F 6-EM earphone / clip microphone

art.-No. 870150

tEcHNicaL data

RF output power	500 mW
Frequency range	446.0062 – 446.0937 Mhz
Channels	16 (15+S)
Audio output	500 mW
Battery	7,2 V Li-Ion, 1100 mAh
Charging time	6 h
Working time (per charge)	24 h
Weight	225 g
Dimensions	54 x 99 x 31 mm
Temperature range	-20 °C – +60 °C
Working ranges, outside, open terrain	5 km
Working ranges, outside, built-up area	3 km

Metal ranging Pole
rP 2

Tramos de jalón

· Each pole consists of 2 sections of 1 m length screwed together to make one pole of 2 m
· Universal 5/8” fitting
· White/red sections
· Metal tip
· Supplied as a set of 6 poles in a carrying bag

art.-No. 800

Extension
1 m

· 1m section for extending the ranging pole as required
· White/red colour
· 5/8” thread

art.-No. 810

ranging Pole tripod
rPt 1

Trípode de pinza

· Extendable tripod legs 77 - 128 cm, with secure clamps
· Weight 1,25 kg
· Clamp with adjustable ball-and-socket joint
· Supplied with carrying case

art.-No. 820

Multi-detector 3-in-1

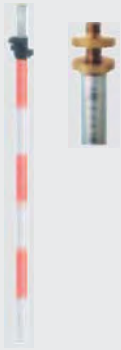
Detector de metales

· The ideal tool for detecting and locating
- Metals
- Electric wires AC
- Wooden beams in walls, floors and ceilings
· Object located by blue LED and an acoustic signal
· Two sensitivity modes
· Automatic calibration

art.-No. M721001

Prism Poles
L 23, L 25, L 36, L 50

Jalones porta-prisma



tEcHNicaL data	L 23	L 25	L 36	L 50
Length	122 - 208 cm	134 - 250 cm	150 - 360 cm	160 - 500 cm
Adapter	5/8“, Leica pin, optical square (Ø 10mm)	5/8“	5/8“	5/8“
Adapter height adjustable	no	yes	no	no
Clamp type	Quick release clamp	Quick clamp	Quick clamp	Quick clamp
Circular bubble	yes	yes	yes	yes
Case	yes	yes	yes	yes
Weight	0,9 kg	1,5 kg	1,9 kg	2,35 kg
art.-No.	223	225	227	228

Bipod
B 18

Bípode

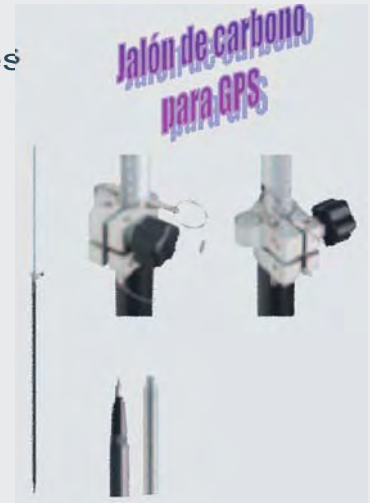
for GPS Rods and Prism Poles.

- Made of aluminium
- Working range of legs 1,10 m to 1,80 m
- Quick release clamping mechanism for legs
- Possible rod diameters 19 to 38 mm
- Staffs and poles secured with thumb screw
- Weight 2 kg
- Supplied with: leg clip and nylon case

art.-No. 640

gPS antenna Poles
g 20, g 25

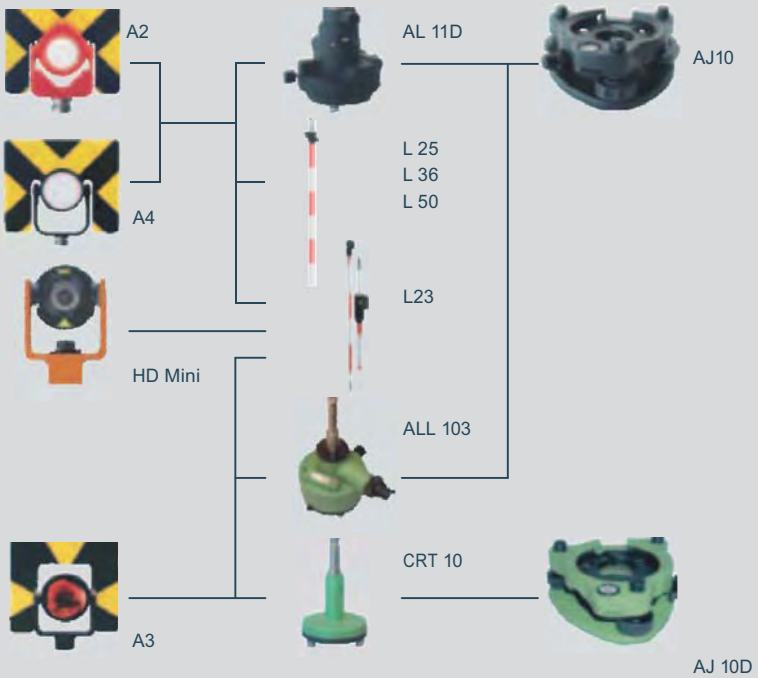
Jalón de carbono para GPS



tEcHNicaL data	g 20	g 25
Length	200 cm	136 - 248 cm
Adapter	5/8“	5/8“
Material lower tube	Carbon fibre	Carbon fibre
Material upper tube	Carbon fibre	Aluminium
Connection	Fixed	Telescopic
Clamp type	-	Screw clamp
Circular bubble	yes	yes
Case	yes	yes
Weight	0,6 kg	1,1 kg
Remark	lightweight	Steel locking pin can be inserted at 1,80, 2,00, 2,20 m to guarantee no slipping
art.-No.	630	635

Opciones de combinación

coMBiNatioN oPtioNS



Prismas

Prismset a2

- Tilting prism holder made of plastic, yellow/black target made of metal. Including bag.
- Single prism Ø 62,5 mm
- Accuracy ± 2“
- Offset 0/-30 mm
- Axis height 100 mm

art.-No. 401600

Prismset a3 (Leica style)

- Tilting prism holder made of plastic, yellow/black target made of metal. Including bag.
- Single prism Ø 62,5 mm
- Accuracy ± 2“
- Offset -34 mm
- Axis height 84 mm

art.-No. 401700

Prismset a4

- Tilting prism holder made of metal, yellow/black target made of metal. Including bag.
- Single prism Ø 62,5 mm
- Accuracy ± 2“
- Offset 0/-30 mm
- Axis height 97 mm

art.-No. 401800

Mini prismas

Mini Prism Set Hdmini

- With circular levelling vial, padded bag, 5/8” female base, hook for plumb bob
- Single prism Ø 25 mm
- Accuracy ± 2“
- Offset 0/-30 mm
- Axis height 70 mm

art.-No. 403000

Mini Prism Set gF105

- Ø 25 mm
- Accuracy ± 2“
- Double yoke
- 0/-30 mm offset
- Can be mounted from top or bottom
- 2 circular bubbles
- Padded bag

art.-No. 403200

Mini prisma con varillas

Mini Prism Pin Pole Set adS 103

- The pin pole has 3 sections that screw together to form a height of 0,6, 1,2 or 1,8 m.
- The adjustable 25 mm prism can be locked anywhere along its length.
- 0 mm offset

art.-No. 403100

Plataformas nivelantes

tribrachs

- AJ 10 without optical plummet
- Available in black and green

art.-No. black 400103
art.-No. green 400101

- AJ 10-D with optical plummet
- Available in black and green

art.-No. black 400003
art.-No. green 400001

- DJ 100 with laser plummet
- Available in black

art.-No. 400303

Adaptadores

tribrach adapter

- AL11-D
- With optical plummet, height adjustable, tubular bubble
- Available in black

art.-No. 400203

- CRT 10
- With Leica adapter
- Available in green and black

art.-No. black 400250
art.-No. green 400251

- ALL 103
- Leica adapter
- Optical plummet
- Tubular bubble
- Available in green

art.-No. 400205

rod Levels

Niveles de escuadra

LR 1 LR 34 LR 39 LR 5

For holding, fixing or suspending to ranging poles and levelling rods

LR 39 Plastic	not adjustable
LR 39 Metal	not adjustable
LR 34 + LR1 Metal	adjustable
LR 5 Wood	adjustable

articLE	art.-No.
Lr 39, plastic	390
Lr 39, metall	391
Lr 1, metal, adjustable	310
Lr 34, metal, adjustable	330
Lr 5, wood	350

optical Squares
F1, F2, J2, F10, c1, F8

Escuadras prismáticas

F 1/F10 J2 C1 F8

Type	Housing	Accuracy
F1	Metal or plastic	> 1‘
F2	Metal or plastic	> 1‘
J2	Plastic	> 2‘
F10	Metal or plastic	> 2‘
C1	Metal	> 3‘
F8	Plastic	> 1‘

articLE	art.-No.
Optical square F 1	210
Optical square F 1 with metal housing	211
Optical square F 2	220
Optical square F 2 with metal housing	222
Optical square J 2	242
Optical square F 10	250
Optical square F 10 with metal housing	251
Optical square F 8 without case	280
Optical square c 1 with case	230
Zip case FE 1a	012
press stud case FE 1B	013
range pole adapter L1	277

Surveyors’ Folding Frames

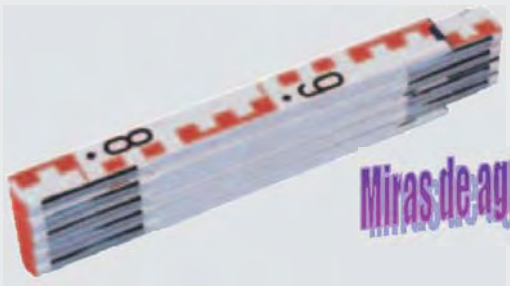
Including carrying strap

DIN A4 plastic (red)
DIN A4 plexiglass (transparent)
DIN A4 wood
DIN A3 plastic
DIN A3 wood

Marcos para fichas

articLE	art.-No.
diN a4, wood	541
diN a4, plastic (red)	542
diN a4, plexiglas (transparent)	543
diN a3, wood (w/o picture)	531
diN a3, plastic (w/o picture)	532

Surveyors’ Folding rules



Miras de agrimensor

Made from the finest quality wood, with strong joint springs.
Front side: Levelling graduations (E reading) 1 m black, 1 m red
Reverse side: mm graduation in black
Available in 2 m and 3 m lengths

articLE	art.-No.
surveyors’ folding rule, 3 m, erect	410
surveyors’ folding rule, 2 m, erect	412
t1 surveyors’ field bag	601